United States Department of Agriculture

Forest Service

Southern Region

Appendix B - The Planning and Analysis Process

Prepared for Land Management Plan Revision

December 2012

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B.1 The Planning Process

36 CFR Part 219.12 describes the required process for preparation, revision, or significant amendment of a forest plan. The following describes the required steps and how the National Forests in Mississippi forest plan revision process will fulfill those steps. Documents identified are in the process record.

B.1.1 Identification of Purpose and Need (CFR 219.12(b))

The current forest plan for the National Forests in Mississippi went into effect in 1985 and has been amended 18 times to date. Periodic reviews have identified numerous areas where conditions have changed since 1985. In some cases, new scientific understanding evolved, monitoring direction needed to shift to more important resource concerns, or current direction was not having the intended outcome. For other issues, there were new public priorities, and new desired conditions were needed. In recent years, restoration and maintenance of biodiversity, old growth forest habitats, and ecosystem management have gained public and scientific interest and have emerged as forest management issues. The amount of time since the implementation of the 1985 forest plan, new scientific understanding, and shifting public interests have all contributed to the need to revise the forest plan.

Public involvement in the identification of significant issues and management concerns has been a key part of the planning process. Issues identified by the public, the Forest Service, interested groups, and other state and federal agencies guided the need for change and the development of management alternatives.

In addition to issues identified through public involvement, the "USDA Forest Service Strategic Plan for Fiscal Years 2007-2012" influenced which Plan revision issues were most relevant. Local national forest management direction should be consistent with established national and regional policies, goals and objectives. Forest plan direction for the National Forests in Mississippi focused on implementation of Forest-specific direction consistent with national and regional policy and management emphasis.

The major issues driving the development of management strategies or plan alternatives were native ecosystem restoration, biodiversity and species viability, forest health, vegetation management (timber), fire management, old growth, watersheds, access management, recreation, special areas, land use and ownership, climate change, minerals, and economic benefits.

B.1.2 Planning Criteria (219.12(c))

The following are identified as planning criteria used in the development of the National Forests in Mississippi revised forest plan.

B.1.3 Laws

Alternatives should meet the intent of the Organic Administration Act and Weeks Law identifying the purpose of the National Forest to improve and protect the forest, to secure favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States.

Alternatives should meet the intent of the Multiple-Use Sustained-Yield Act of 1960 to administer the National Forest for outdoor recreation, range, timber, watershed, and wildlife and fish purposes. That these resources are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and

coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

Alternatives should meet the intent of the Forest and Rangeland Renewable Resources Planning Act of 1974 as amended by the National Forest Management Act of 1976 including requirements to provide for multiple use and sustained yield of the products and services obtained therefrom in accordance with the Multiple-Use Sustained-Yield Act of 1960, and, in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness.

Alternatives should comply with the Clean Water Act, Endangered Species Act and other applicable laws. Protection of water quality to provide for current and future beneficial uses will be a high priority in all alternatives.

B.1.4 National Direction (formerly RPA Program)

The goals and objectives of the current Forest Service Strategic Plan will be addressed as applicable to the National Forests in Mississippi. These include:

Goal 1. Restore, Sustain, and Enhance the Nation's Forests and Grasslands

Objective 1.1 Reduce the risk to communities and natural resources from wildfire

Objective 1.2 Suppress wildfires efficiently and effectively

Objective 1.3 Build community capacity to suppress and reduce losses from wildfires

Objective 1.4 Reduce adverse impacts from invasive and native species, pests, and diseases

Objective 1.5 Restore and maintain healthy watersheds and diverse habitats

Goal 2. Provide and Sustain Benefits to the American People

Objective 2.1 Provide a reliable supply of forest products over time that (1) is consistent with achieving desired conditions on National Forest System lands and (2) helps maintain or create processing capacity and infrastructure in local communities

Objective 2.3 Help meet energy resource needs.

Goal 4. Sustain and Enhance Outdoor Recreation Opportunities

Objective 4.1 Improve the quality and availability of outdoor recreation experiences

Objective 4.2 Secure legal entry to national forest lands and waters

Objective 4.3 Improve the management of off-highway vehicle use

Goal 5. Maintain Basic Management Capabilities of the Forest Service

Objective 5.1 Improve accountability through effective strategic and land management planning and efficient use of data and technology in resource management

Objective 5.2 Improve the administration of national forest lands and facilities in support of the agency’s mission

B.1.5 Public Issues and Management Concerns

The alternatives will be developed and analyzed with consideration for the public issues, management concerns, and resource use and development opportunities identified and described in the purpose and need. (See chapter 1 of the DEIS and appendix A for more information.)

B.1.6 Other Plans

The alternatives will be developed and analyzed with consideration for the plans and programs of other Federal and State agencies, local governments, and Indian tribes. The responsible official will review these programs and plans to determine how the National Forests in Mississippi forest plan may complement or find consistency with these other plans.

B.1.7 Ecological Factors

The management actions needed to restore, sustain, and/or enhance the composition, structure, and function of the ecological communities within the national forest will be considered in developing the alternatives. The potential effects of climate change will be considered in developing and analyzing the alternatives.

B.1.8 Social Factors

Alternatives will consider the effects of different management strategies on the local communities.

B.1.9 Economic Factors

Budget constraints based on past funding trends will be used in the development of desired conditions and objectives to provide meaningful measures that can reasonably be expected. The resulting plan shall provide for multiple use and sustained yield of goods and services from the national forest in a way that maximizes long term net public benefits in an environmentally sound manner.

B.1.10 Resource Integration

During the forest planning process, lands which are not suited for timber production shall be identified in accordance with the criteria in Sec. 219.14.

The methods, timing, and intensity of vegetation management practices shall be defined in the forest plan with applicable standards and guidelines and associated outcomes in the form of goals, desired conditions, and objectives.

The allowable sale quantity of timber that may be sold each decade will be established for each alternative.

Unless otherwise provided by law, roadless areas within the National Forest System shall be evaluated and considered for recommendation as potential wilderness areas.

Direction shall be provided for the management of designated wilderness and primitive areas.

Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. Each alternative shall establish objectives that would help maintain or improve habitat for management indicator species.

A broad spectrum of outdoor recreation opportunities shall be provided for in each alternative. The identification of recreation opportunities will include an updated inventory of recreation opportunity

spectrum classification. The scenery management system will be used in planning to identify visual resources and guide management of these resources. The alternatives will provide a diversity of recreation opportunities including motorized and nonmotorized recreation.

Mineral exploration and development in the planning area shall be considered in developing alternatives. General suitability for minerals and energy development will be established. Private mineral rights will be considered in all decisions made in the planning process.

The alternatives shall provide for protection and management of the water and soil resources. Important water uses will be identified.

The alternative shall provide for the identification, protection, interpretation, and management of significant cultural resources on the national forest. Planning for the resource shall be governed by the requirements of Federal laws pertaining to historic preservation. Interactions with other multiple uses will be considered and impacts analyzed.

The list of unique or important forest, aquatic, or geologic types needed to complete the national network of research natural areas will be checked to ascertain if any potential missing research natural area types are located on the National Forests in Mississippi.

The alternatives shall provide for diversity of plant and animal communities and tree species consistent with the overall multiple-use objectives of the planning area. The interdisciplinary team shall consider how diversity will be affected by various mixes of resource outputs and uses, including proposed management practices. The diversity analysis should be based on processes readily identifiable with other state or national systems, such as NatureServe. The analysis will address both ecosystem and species diversity.

The minimum management requirements for resource protection, vegetation manipulation, silvicultural practices, even-aged management, riparian areas, soil and water, and diversity shall be incorporated into the objectives, standards and guidelines in each alternative.

B.1.11 Inventory data and information collection (219.12(d))

The following are examples of data and information sources used in the planning and analysis process for the National Forests in Mississippi revised forest plan and environmental impact statement (EIS):

- Stand examination inventory data collected in the field is entered into our corporate database for tracking overstory vegetation with fields of information such as forest type, stand age, condition, and acres. Our current GIS (geographic information system) utilizes ArcGIS, which links to our FSVeg tabular database.
- Other types of inventory data collected and entered into corporate databases and our GIS include roads and trails and conditions, recreation sites and conditions, archeological sites, stream networks, certain wildlife habitats, fire history, digital elevation, and land ownership.
- Federal and State agency, local government and tribal websites are a source of information about other programs and plans, lists of rare species and occurrence records, some economic information, forest health information, soil and water information.
- The National Forests in Mississippi adopted the National Hierarchical Framework of Ecological Units as a consistent nationwide classification system to describe similar ecosystems for planning purposes. This framework provides a standardized method for classifying, mapping, and describing ecological units at various geographic, planning and analysis scales. Ecological units across the U.S. are mapped based on patterns of climate, soils, hydrology, geology, landform, and topography. These

classifications represent homogeneous units having similarities among their resource capabilities and relationships.

- Place based knowledge and information is contributed by participants in the collaborative planning process.
- U.S. Census Bureau data is used to summarize demographics and some economic information.
- Citations listed in the References chapter provide additional information including the best available scientific information in regard to specific analysis topics.

B.1.12 Analysis of the Management Situation (219.12(e))

The analysis of the management situation is a determination of the ability of the planning area covered by the forest plan to supply goods and services in response to society's demands. Benchmarks define the range within which alternatives can be constructed and include: (1) the minimum level of management; (2) the maximum physical and biological production potentials; and, (3) the calculated long term sustained yield. A benchmark for maximum present net value was not developed the way these three were. It was deemed to be outside the policy mandates of the agency. As mentioned in the Purpose and Need section above, the development of alternatives focused on ecosystem restoration and increasing biological diversity. The present net values calculated for ecosystem management alternatives generally were lower for restoration prescriptions. This was because the cultural treatments to reestablish desired vegetation were more costly and the rotation lengths for longleaf and shortleaf were longer.

When considered along with the current level of goods and services provided, projections of demand, a determination of the potential to resolve public issues and management concerns, and considering the data and information available, this provides a basis for determination of the need for change.

More details of the analysis of the management situation can be found in the following documents:

Section B.2 of this appendix (B) Timber Resource Program, Suitability and Sustainability Analysis.

Appendix C Analysis of Potential Wilderness and Wild and Scenic River Segments

Appendix D Special Areas, Status, Trends, and Strategies

Appendix E Watershed Analysis

Appendix F Management Indicator Species (MIS) Review

Appendix G Ecosystem and Species Diversity Report

Appendix H Unit Analysis for Ecological Systems occurring on multiple Units

Forest-wide Roads Analysis Report

Timber Program Suitability and Sustainability Analysis

Guidance for Conserving and Restoring Old-Growth Forest Communities

B.1.13 Formulation of Alternatives (219.12(f))

A range of alternative plan contents are expressed and considered in the process of formulating a proposed plan. The process of developing this proposed plan and alternatives focused first on defining common ground among the interested parties and narrowing the initially broad possibilities for plan content to those elements generally agreeable to most participants in the planning process.

In addition to issues identified through public involvement, the "USDA Forest Service Strategic Plan for Fiscal Years 2007-2012" influenced which Plan revision issues were most relevant. Forest plan direction for the National Forests in Mississippi focused on implementation of Forest-specific direction consistent with national and regional policy and management emphasis.

The major issues driving the development of management strategies or plan alternatives were native ecosystem restoration, biodiversity and species viability, forest health, vegetation management (timber), fire management, old growth, watersheds, access management, recreation, special areas, land use and ownership, climate change, minerals, and economic benefits.

Benchmark Analysis

Bench mark analysis was used to approximate maximum economic and biological resource production opportunities. Also, minimum management levels were analyzed to set a lower bound for Forest management. These benchmarks are useful in evaluating the compatibilities and conflicts between different resource objectives and defining the range within which integrated alternatives could be developed.

Minimum Level of Management Benchmark

This benchmark represents the minimum level of management needed to maintain and protect the National Forests in Mississippi as part of the National Forest System. This level of management does involve some activities and costs in order to meet the following minimum requirements.

- Protect the life, health, and safety of incidental users;
- Prevent environmental damage to the land or resources of adjoining lands of other ownerships or downstream users;
- Conserve soil and water resources;
- Prevent significant or permanent impairment of the productivity of the land; and
- Administer unavoidable non-Forest Service special uses and mineral leases, licenses, permits, contracts, and operating plans.

This benchmark was developed as alternative A (custodial management alternative). This developed the scenario for management of legal requirements at the lowest feasible funding level.

The legal requirements for the National Forests in Mississippi include management of Threatened and Endangered Species. Therefore this alternative included the habitat management necessary to maintain the red cockaded woodpecker and gopher tortoise populations on the Forest. This focused the timber and burning programs on the Bienville, DeSoto and Homochitto National Forests. This would allow for a core capability in these program areas to respond to catastrophic natural events Forest wide.

Current Level of Management Benchmark

This benchmark is the same as the no-action alternative, which is described in this environmental impact statement as alternative B. Current level of management was defined as the current program levels in terms of budget. This budget level was analyzed with the same resource management focus as included in the proposed action alternative.

Maximum Level of Timber Production Benchmark

Maximum timber production was modeled as maximum biological potential using the Excel spreadsheet model described later in the Timber Resource Program, Suitability and Sustainability section introduction below. The maximum physical and biological production potential benchmark was not developed as an

alternative because the funding and staffing resources were not likely to be available to achieve that level of outputs. This benchmark maximized timber production within the same biological constraints applied to all alternatives. However it was not limited based on budget and staffing capabilities.

The resulting timber yields would be a departure over long term sustained yields in the first three decades. Then volumes would fall below long term sustained yields in decades 4 and 5. This departure would be caused by the heavily accelerated harvest of very productive loblolly and slash pine forests for restoration to slower growing longleaf and slash pine and hardwood forests managed at lower densities and longer rotations when the desired condition is attained.

Table B 1. Timber sale program quantity for all products by decade

Million Cubic Feet/Decade				
Decade 1	**Decade 2**	**Decade 3**	**Decade 4**	**Decade 5**
557	431	386	279	267
Long-Term Sustained Yield = 307 MMCF per Decade				

Maximum Present Net Value Benchmark

Financial efficiency is defined as how well the dollars invested produce revenues to the agency. Economic efficiency is defined as how well the dollars invested produce benefits to society. Present net value (PNV) is used as an indicator of financial and economic efficiency.

An Excel spreadsheet was used to calculate the present net value over a 50-year period. A 4 percent discount rate was used. Decadal and 50 year cumulative present values for program benefits and costs as well as present net values are the product of this spreadsheet. For each decade, an average annual resource value was estimated, multiplied by 10 years, and discounted from the mid-point of each decade.

The revenue values for timber were the values described previously in the timber suitability analysis section. The estimates of recreation visitors were derived from the National Visitor Use Monitoring (NVUM) Report for the National Forests in Mississippi, which was updated in 2009. The benefit values for the recreation visits came from research conducted by the Southern Research Station. (A recreation "visit" is defined as the entry of one person onto a national forest site or area to participate in recreation activities for an unspecified period of time. This site visit ends when the person leaves the site or area for the last time.)

Table B 2 displays the economic values that were used in the present net value analysis for each recreation activity.

A "maximum present net value" benchmark would represent the combination of management activities that would create the greatest difference between the discounted revenues or benefit values compared to the discounted costs. In comparing the economic values of the uses of the National Forests in Mississippi, recreation (and wildlife-related recreation) provides the majority of the total estimated discounted benefits. So a management scheme that would "maximize" the recreation potential on the National Forest, and specifically one that would emphasize bicycling, horseback riding and hunting activities, would need to be enacted to "maximize" the present net value on the Forest.

Table B 2. Present net values for recreation activities

Recreation Activity	Description	Value/Visit
Camping	Camping at a developed recreation site	$51.26
Driving	Motorized recreation including driving for site seeing and motorized boating activities	$43.84
General	Generalized recreation including just relaxing, swimming, and non-specific forest recreation	$80.03
Hiking	Hiking	$51.26
Nature/Historical	Nature based activities including special forest gathering, historical site visit, nature study visit, and nature study	$51.26
Off-Highway Vehicles	Off-Highway Vehicle activities including three/four wheelers and motorcycles	$51.26
Primitive Camping/ Wilderness	Primitive camping (using undeveloped sites) and backpacking	$76.10
Picnicking	Picnicking	$90.55
Trails	Trail use including bicycling, horseback riding and non-motorized water activities such as canoeing	$205.34
Viewing Scenery/ Viewing Wildlife	Nature viewing and wildlife viewing	$60.01
Hunting	Hunting	$140.53
Fishing	Fishing	$45.96

Source: J. Michael Bowker, et. al., Estimating the Net Economic Value of National Forest Recreation: An Application of the National Visitor Use Monitoring Database, FS 09-02, September 2009, The University of Georgia.

Note: The values were originally reported in 2004 dollars, and were updated to 2010 dollars using the GDP Price Deflator from the US Department of Commerce, Bureau of Economic Analysis.

For a benchmark that would "maximize present net value using market values only", the recreation and wildlife benefit values disclosed above would not be used since they are not market values (i.e., values representing money exchanged in a market place). Instead, the fees received from developed recreation areas and campgrounds, and the monies paid for hunting and fishing permits would be the "values". So, under this form of management, developed recreation and campground opportunities would be maximized, along with hunting and fishing opportunities. Also, since timber management results in "returns to the treasury", timber production would be a part of this benchmark. The timber management that would contribute the most toward maximizing present net value would be the management described in the maximum biological potential program described in the maximum timber production benchmark described above.

Since the purpose of a benchmark is to identify the range within which integrated alternatives can be developed, it was felt that an attempt to speculate and quantify exactly what a "maximum" level of recreation uses might be for these benchmarks would not be very useful. However, it is important to identify the types of management emphases that would be conducted under such "benchmark" forms of management to help facilitate the identification of a range within which alternatives can be developed.

For the alternatives, recreation, wildlife, and timber outputs were estimated and a present net value of each alternative determined. In estimating the present net value for the alternatives, the costs used were derived from recent Forest budgets for all the program areas on the National Forests. The unit costs were then applied to the outcome levels for each alternative. The following table shows the present net values for the alternatives.

Table B 3. Present net values of costs and benefits in millions of dollars (2010) for the alternatives

	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
Cumulative Total Present Net Value	$3,004,322	$5,556,813	$6,109,475	$6,049,826	$6,041,772
Present Value Benefits by Program:					
Range	$0	$0	$0	$0	$0
Timber	$75,374	$120,431	$179,981	$202,576	$235,579
Minerals	$73,384	$73,384	$73,384	$73,384	$73,384
Recreation	$1,278,868	$2,218,825	$2,411,057	$2,411,057	$2,411,057
Wildlife:	$2,244,271	$3,929,540	$4,266,602	$4,266,602	$4,266,602
Total PV of Benefits	$3,671,897	$6,342,181	$6,931,023	$6,953,618	$6,986,622
Present Value Costs by Program:					
Range:	$87	$109	$109	$131	$131
Timber:	$108,128	$127,198	$133,075	$146,376	$153,038
Roads/Engineering	$183,275	$215,602	$225,551	$248,126	$259,402
Minerals:	$6,313	$7,423	$7,750	$8,534	$8,925
Recreation	$39,729	$46,739	$48,894	$53,792	$56,230
Wildlife:	$63,087	$74,211	$77,629	$85,401	$89,276
Soil, Water, Air..	$15,064	$17,720	$18,526	$20,376	$21,312
Protection/Forest Health	$218,802	$257,421	$269,285	$296,236	$309,689
Lands	$15,826	$18,634	$19,483	$21,443	$22,422
Planning, Inv., Monitoring	$17,263	$20,311	$21,247	$23,380	$24,425
PV Costs	$667,575	$785,368	$821,549	$903,793	$944,850

Alternatives Analyzed

The alternatives were developed within the benchmarks. Alternative A (custodial management) was developed to analyze the minimum level of management. Alternative B (no-action) was developed to analyze the continuation of current management level. Alternative C (proposed action) was developed to analyze an alternative that could be implemented with the organization available if adequately funded. Alternatives A through C had the same emphasis and priorities with shifts in implementation strategy due to funding levels. Alternative D and E were added to analyze not only additional funding and program levels but shifts in emphasis from restoration in alternative D (accelerated restoration) to forest health in alternative E (enhanced forest health).

B.1.14 Estimated Effects of Alternatives (219.12(g))

The estimated effects of the alternatives are described in chapter 4 of this document. Some of the more pertinent effects and outcomes are displayed in tables at the end of chapter 2.

B.1.15 Evaluation of Alternatives (219.12(h))

The ID Team compared the aggregate effects of the alternatives with regard to physical, biological, economic, and social impacts, outputs of goods and services, and overall protection and enhancement of the environment.

B.1.16 Preferred Alternative (219.12(i))

The forest supervisor has reviewed the ID Team's evaluation and has recommended to the regional forester that alternative C be considered the preferred alternative; it is so identified in the draft EIS, and displayed as the proposed plan.

B.1.17 Plan Approval (219.12(j))

The regional forester shall review the proposed plan and final EIS and either approve or disapprove the plan. A record of decision shall be prepared.

B.1.18 Monitoring and Evaluation ((219.12(k))

Monitoring requirements are identified in the proposed plan to evaluate on a sample basis how well implementation is adhering to plan direction.

B.2 Timber Resource Program, Suitability and Sustainability Analysis

B.2.1 Introduction

Vegetation management practices envisioned in the revised plan for the National Forests in Mississippi (Forests) support restoration of native ecological systems, improve conditions for threatened and endangered species, and improve forest health. These ecological restoration objectives are based on the desired future conditions described in part 1 of the revised plan. The desired conditions of the plan are based on the analysis described in the ecosystem diversity report and the species diversity report included in the planning record. An ecological sustainability evaluation model was used to consider conditions needed for ecological sustainability, and species diversity and sustainability.

The results of the ecological sustainability evaluation model emphasized restoration of longleaf, shortleaf and hardwoods forest wide on appropriate sites. Restoration of prairies on the Bienville District was identified as high priority. Restoration of bogs and savannahs in the near coast flatwoods on the De Soto District were also considered a priority. In areas identified as red-cockaded woodpecker habitat management areas, and suitable soils for gopher tortoise, thinning to achieve optimal habitat conditions was deemed highest priority. As program level allowed, other projects addressing forest health and general habitat conditions were identified as needed.

The changes in vegetation species composition, condition and age were modeled using an excel spreadsheet. Formulas were entered which moved 2006 acres entered by vegetation type and age in ten year increments. The formulas accounted for acres modeled to change vegetation types due to restoration treatments. The assumptions used in the modeling of vegetation treatments and harvest volumes were deemed to be biologically attainable by the interdisciplinary team developing the plan strategy. Likely outcomes for the plan were attained by tempering the biologically attainable vegetation program by applying treatment priorities and program constraints (budget) to the model. Because of this, system age and application of rotations were unimportant factors. The likely vegetation program should be predominantly thinning and system restoration harvests. The restoration harvests are likely to be

predominantly clearcuts artificially regenerated. Other regeneration will be predominantly harvest methods aimed at natural regeneration (seed tree and shelterwood).

The following table displays the relationship between ecological systems used in the ecological sustainability evaluation model and the vegetation management model. For more details on the forest type composition of the vegetation modeling groups, see the section titled "Vegetation Management Model Silvicultural Assumptions and Parameters" of the Timber Resource Program, Suitability, and Sustainability Analysis Report.

Table B 4. Relationship between ecological systems used in modeling

Ecological System	Vegetation Modeling Group
Upland Longleaf Pine Forest and Woodland	Longleaf Pine
Shortleaf Pine-Oak Forest and Woodland	Shortleaf Pine
Loblolly Pine Forest, Southern Loblolly-Hardwood Flatwoods	Upland Loblolly Pine
	Mesic Loblolly Pine
Slash Pine Forest	Slash Pine
Northern Dry Upland Hardwood Forest	Northern Dry Upland Hardwood
Southern Dry Upland Hardwood Forest	Southern Dry Upland Hardwood
Southern Loess Bluff Forest	
Southern Mesic Slope Forest	Southern Mesic Hardwood
Northern Mesic Hardwood Forest	Northern Mesic Hardwood
Floodplain Forest	Floodplain Forest
Lower Mississippi River Bottomland & Floodplain Forest	Lower Mississippi River Bottomland & Floodplain Forest
Near-Coast Pine Flatwoods	Near-Coast Pine Flatwoods

The Timber Resource Program, Suitability, and Sustainability Analysis Report included in the planning record is a summary of analysis of the suitability of National Forests in Mississippi forest lands for timber production and harvest under the revised forest plan. The analysis also provides estimates of the timber sale program quantity and the long-term sustained-yield capacity of these lands. Timber sale program quantity is the quantity of timber that is likely to be removed by revised plan implementation. Long-term sustained-yield capacity calculations are based on the amount of timber that could be harvested assuming the desired conditions were achieved and the silvicultural management strategy for the desired condition was being implemented. This estimate was based on the amount of timber that could be removed in perpetuity on an annual basis.

Long-term sustained-yield capacity and timber sale program quantity are estimates achieved by use of the excel spreadsheet model mentioned above. Timber sale program quantity is aspirational in nature, rather than being a commitment to offer certain levels of volume at any given time. The timber sale program anticipates silvicultural activities which are analyzed and selected through National Environmental Policy Act (NEPA) process decisions which implement the revised plan. These timber sale projects apply active management to the vegetative resource in order to move the forest toward desired conditions (see part 1 of the forest plan). Silvicultural activities described in the Timber Resource Program, Suitability, and Sustainability Analysis Report include commercial timber sales of intermediate timber harvesting (thinning, seed tree removal), and harvest treatments that are even-aged in nature (clearcut, shelterwood, seedtree), two-aged regeneration (shelterwood or seed tree with reserves), or uneven-aged (group selection). The size of the vegetation management program (acres of management activities) has been

determined by the ecological needs of the resource, tempered by the historical budget and personnel levels (physical capability) for the National Forests in Mississippi.

The excel spreadsheet model reflects the changes in vegetation types, ages and condition through five decades of vegetation management to achieve the forest plan desired conditions. This spreadsheet model included format and formulas to calculate acres of treatment and resulting volumes. The volume tables included in this model were based on experienced volume yields and professional judgment. The experienced volumes were a sampling of volumes from actual timber sales over many years. These volumes were recorded by forest type, age, and timber harvest prescription. The results were averaged on a per acre basis for prescribed harvest stand acres. These averages were entered into the excel model as well as estimates for harvest at combinations of forest type, age, and prescription; for which there was no harvests in past contracts and used to calculate volume outcomes. The section below describing anticipated changes and treatments provides likely outcomes in acres for each district and vegetation classification based on this model.

Ecological restoration has been the primary management emphasis through the forest plan revision process. Improved forest health will also be achieved through implementation of ecological restoration projects. The timber sale activities described above will yield wood products to the commercial markets in the form of pulpwood, sawtimber and biomass fuels.

B.2.2 Suitability

Stage 1: Lands Tentatively Suitable for Timber Production

The suitability determinations used in plan revision are based on land classifications contained in the Forest Service FSVeg forest vegetation database as of 2006. These classifications have been updated through inventories and project decisions made over the last several decades.

Most of the land base on the National Forests in Mississippi (97 percent) is considered tentatively suitable for timber production. Exceptions to that include areas administratively or congressionally withdrawn from such practices and non-forest land. The remainder of the land base is considered tentatively suitable for timber production.

The tables in section B.2.3 below summarize acres for the timber land classification categories based on 2006 data. These land classifications are subject to change based on field inventory and subsequent classifications.

Stage 2: Timber Suitability – Economic Analysis

The following tables show the present net value for silvicultural management alternatives in each ecological system / vegetation type. These silvicultural management alternatives represent a range of management intensities or ways to attain different desired conditions. Present net value is the difference between the discounted revenues and discounted costs, using a 4 percent rate. The present net values presented do not indicate the need to categorize any areas as not cost-efficient in meeting forest plan objectives, which include timber production.

Table B 5. Present net value (PNV) of silvicultural management alternatives by ecological system

Silvicultural Management	PNV/Acre
Upland Loblolly	
Even Aged Shortleaf Restoration	$828
Even Aged	$504
Un-even aged	$421
Irregular Even Aged	$117
Even Aged Longleaf Restoration Short Rotation (HMA)	$-109
Even Aged Longleaf Restoration Long Rotation (HMA)	$-348
Mesic Loblolly	
Even Aged Hardwood Restoration	$463
Un-even aged	$360
Even Aged	$308
Irregular Even Aged HMA Short Rotation	$229
Irregular Even Aged HMA Long Rotation	$73
Slash	
Even Aged Longleaf Restoration Long Rotation (HMA)	$367
Un-even aged	$307
Irregular Even Aged	$113
Even Aged	$-99
Even Aged Longleaf Restoration Short Rotation (HMA)	$-126
Flood Plain Slash	
Un-even aged	$767
Even Aged	$705

Silvicultural Management	PNV/Acre
Shortleaf	
Irregular Even Aged	$20
Un-even aged	$-67
Even Aged	$-273
Even Aged Woodland	$-332
Longleaf	
Irregular Even Aged Woodland	$139
Un-even aged	$-21
Even Aged Woodland	$-126
Irregular Even aged	$-282
Even Aged	$-413
Dry Upland Hardwood	
Un-even aged	$308
Irregular Even aged	$84
Irregular Even Aged Woodland	$-85
Mesic Hardwood	
Un-even aged	$312
Irregular Even aged	$133
Floodplain Hardwood	
Un-even aged	$285
Irregular Even aged	$132
Mississippi River Floodplain Hardwood	
Un-even aged	$-21
Irregular Even aged	$-79

The present net value calculations above used the historical timber sale revenues, timber management costs, road costs and road factors shown in Table B 3.

- Revenues:

Table B 6. Revenues

Forest Product	Range $ / CCF[a]	Weighted Average $ / CCF
Pine Sawtimber	$55.43 – $105.14	$77.90
Pine Pulpwood	$8.37 - $35.79	$16.66
Hardwood Sawtimber	$33.32 - $60.97	$45.57
Hardwood Pulpwood	$2.00 - $38.17	$14.15

a – CCF – hundred cubic feet

- Timber management costs:
    - Sale preparation or administration - $20.79 / ccf
    - Site preparation – range $56.00 – 665.89 per acre; average $245.18 per acre
    - Planting – range $259.00 - $316.00 per acre
    - Stocking surveys - $14.00 - $28.00 per acre
    - Release - $185.00
    - Non-commercial thinning - $410.00
    - Prescribed fire – $56.00
- Road costs and factors
    - Road construction - $0.00
    - Road reconstruction - $21,210.00
    - Road maintenance – $743.00
    - Average miles road constructed per acre harvested - 0.0
    - Average miles road reconstructed per acre harvested - 0.002034 miles per acre
    - Average miles road maintained per acre harvested - 0.002034 miles per acre

Stage 3: Identification of Lands Suitable for Timber Production

The tentative classifications were reviewed prior to plan revision analysis for accuracy and appropriateness under the draft plan's desired conditions for the various forest ecosystem vegetation types. As a result of this review, acres in the near coast flatwoods system were modeled as not appropriate for timber production. Timber production is not compatible with the open woodland savanna and bog desired condition of these sites. Most of these areas were classed as suitable for timber production under the guidance of the 1985 Land and Resource Management Plan for the National Forests in Mississippi. Areas identified on the National Forests in Mississippi preliminary list of possible old growth have been modeled as not appropriate for timber production as well, if they were not already in that category. This was done because there would be no intent to schedule harvesting these stands for regeneration. They may be harvested when project level decisions identify the areas are not providing desired old growth character or finds the sites more important for restoration than old growth character when the species occurring are not deemed site appropriate. Areas have also been identified as not suitable for timber production during past inventories due to site characteristics, uses, barriers to management or red-cockaded woodpecker management guides. Each alternative analyzed, utilizes this same allocation of acres to the land base suitable for timber management. Most of the land base on the National Forests in Mississippi (81 percent) is considered suitable for timber production after identifying lands not appropriate for timber production.

Table B 4 quantifies lands that are suitable for timber production and those lands that are not appropriate for timber production. There is a timber land classification map included in the planning record. This map displays areas where timber harvesting activities could occur.

Table B 7. Lands suitable and unsuitable for timber production by Forest

National Forests in Mississippi								
	Bienville NF	**DeSoto NF DeSoto RD**	**DeSoto NF Chickasaw-hay RD**	**Homochitto NF**	**Delta NF**	**Holly Springs NF**	**Tombigbee NF**	**National Forests in Mississippi Totals**
Classification	**Approx. Acres**							
Total National Forest System Land	**178,541**	**368,218**	**150,369**	**191,842**	**60,898**	**155,661**	**67,005**	**1,172,524**
Non-forest lands	1603	9,368	291	2,960	1,701	1,979	924	18,826
Lands that have been withdrawn from timber production	242	11,169	690	228	711	186	1,200	14,426
Lands where technology is not available to ensure timber production would not cause irreversible resource damage								
Lands where there is no reasonable assurance they can be adequately restocked								
Lands Tentatively Suitable for Timber Production	**176,696**	**347,681**	**149,388**	**188,654**	**58,486**	**153,496**	**64,881**	**1,139,272**
Lands where timber production is not compatible with achieving desired conditions and objectives (Lands not appropriate for timber production)	21,748	97,728	10,117	16,585	21,156	12,056	5,627	185,017
Lands Suitable for Timber Production	**154,948**	**249,953**	**139,271**	**172,069**	**37,330**	**141,440**	**59,254**	**954,255**
Lands Not Suitable For Timber Production	**23,593**	**118,265**	**11,098**	**19,773**	**23,568**	**14,221**	**7,751**	**218,269**

B.2.3 Estimated Vegetation Management Practices

Table B 5 - Table B 14 show estimated acres of harvests for vegetation treatment to implement the plan objectives and priorities for the first two decades under five alternatives. These estimates are displayed by district. These likely program acres are provided in the tables below for lands suitable for timber production, or where timber harvests are needed to meet other resource objectives on lands not suitable for timber production.

Table B 8. Estimated vegetation management practices alternative A (custodial) (likely accomplishments for first decade)

Practice	Acres By District							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)	288	279	494					1,061
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning	28,202	16,934	14,896			17,567		77,599
Salvage /Sanitation								
Other Harvest								
Subtotal Acres	28,490	17,213	15,390	0	0	17,567	0	78,660
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			73					73
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			125					125
Salvage /Sanitation								
Other Harvest								
Subtotal Acres	0	0	198	0	0	0	0	198
Grand total Acres	28,490	17,213	15,588	0	0	17,567	0	78,858

Table B 9. Estimated Vegetation management practices alternative A (custodial) (likely accomplishments for second decade)

Practice	Acres By District							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)	288	294	555					1137
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning	27067	23,602	20795			17,656		89,120
Salvage /Sanitation								
Other Harvest								
Subtotal Acres	27,355	23,896	21,350	0	0	17,656	0	90,257
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			116					116
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			319					319
Salvage /Sanitation								
Other Harvest								
Subtotal Acres	0	0	435	0	0	0	0	435
Grand total Acres	27,355	23,896	21,785	0	0	17,656	0	90,692

Table B 10. Estimated vegetation management practices alternative B (no action) (likely accomplishments for first decade)

Practice	Acres By District							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)		981	4,746	177	3,794	4,543	1,854	16,095
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning	17680	23,977	14,909	5,079	6,789	23,807	4,862	97,103
Salvage /Sanitation								
Other Harvest	531							531
Subtotal Acres	18,211	24,958	19,655	5,256	10,583	28,350	6,716	113,729
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			79					79
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			184					184
Salvage /Sanitation								
Other Harvest	33							33
Subtotal Acres	33	0	263	0	0	0	0	296
Grand total Acres	18,244	24,958	19,918	5,256	10,583	28,350	6,716	114,025

Table B 11. Estimated vegetation management practices alternative B (no action) (likely accomplishments for second decade)

Practice	Acres By District							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)	52	1,701	4,250	951	3,571	5,030	2,204	17,759
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning	17,290	25,304	16,762	4,576	6,672	23,283	4,296	98,183
Salvage /Sanitation								
Other Harvest	267							267
Subtotal Acres	17,609	27,005	21,012	5,527	10,243	28,313	6,500	116,209
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			82					82
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning		504	229					733
Salvage /Sanitation								
Other Harvest	14							14
Subtotal Acres	14	504	311	0	0	0	0	829
Grand total Acres	17,623	27,509	21,323	5,527	10,243	28,313	6,500	117,038

Table B 12. Estimated vegetation management practices alternative C (proposed action) (likely accomplishments for first decade)

Practice	Acres By District							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)		1,558	6,530	1,357	5,712	6,898	3,008	25,063
Uneven-aged Management							83	83
Intermediate Harvest								
Commercial Thinning	27,295	29,786	22,788	6,496	10,626	36,284	7,433	140,708
Salvage /Sanitation								
Other Harvest	799							799
Subtotal Acres	28,094	31,344	29,318	7,853	16,338	43,182	10,524	166,653
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)					160			160
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			408		70			478
Salvage /Sanitation								
Other Harvest	51		1,117					1168
Subtotal Acres	51	0	1,525	0	230	0	0	1806
Grand total Acres	28145	31,344	30,843	7,853	16,568	43,182	10,524	168,459

Table B 13. Estimated vegetation management practices alternative C (proposed action) (likely accomplishments for second decade)

Practice	Acres By District							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)	1,109	2,113	6,727	1,212	5,835	8,945	3,020	28,961
Uneven-aged Management							80	80
Intermediate Harvest								
Commercial Thinning	24,810	33,133	27,216	7,535	10,359	41,277	7,542	151,872
Salvage /Sanitation								
Other Harvest								
Subtotal Acres	25,919	35,246	33,943	8,747	16,194	50,222	10,642	180,913
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			1092		107			1199
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			441		85			526
Salvage /Sanitation								
Other Harvest								
Subtotal Acres	0	0	1533	0	192	0	0	1,725
Grand total Acres	25,919	35,246	35,476	8,747	16,386	50,222	10,642	182,638

Table B 14. Estimated vegetation management practices alternative D (accelerated restoration) (likely accomplishments for first decade)

Practice	Acres By District							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)		4,373	9,694	1,357	10,683	11,419	5,359	42,885
Uneven-aged Management							82	82
Intermediate Harvest								
Commercial Thinning	33,785	19,030	18,722	6,496	8,653	26,775	3,752	117,213
Salvage /Sanitation								
Other Harvest	1211							1211
Subtotal Acres	34,996	23,403	28,416	7,853	19,336	38,194	9,193	161,391
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			901		98			999
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning		249	1186					1435
Salvage /Sanitation								
Other Harvest	47							47
Subtotal Acres	47	249	2,087	0	98	0	0	2,481
Grand total Acres	35,043	23,652	30,503	7,853	19,434	38,194	9,193	163,872

Table B 15. Estimated vegetation management practices alternative D (accelerated restoration) (likely accomplishments for second decade)

Practice	Acres By District							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)	4103	3,702	8,117	1,212	9,554	13,463	4,455	44,606
Uneven-aged Management							49	49
Intermediate Harvest								
Commercial Thinning	18,767	24,238	30,065	7,535	9,447	27,171	5,279	122,502
Salvage /Sanitation								
Other Harvest								
Subtotal Acres	22,870	27,940	38,182	8,747	19,001	40,634	9,783	167,157
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			765		84			849
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning		430	1289		11			1,730
Salvage /Sanitation								
Other Harvest								
Subtotal Acres	0	430	2,054	0	95	0	0	2,579
Grand total Acres	22,870	28,370	40,236	8,747	19,096	40,634	9,783	169,736

Table B 16. Estimated vegetation management practices alternative E (enhanced forest health) (likely accomplishments for first decade)

Practice	Acres By District							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)		1,558	4,874	1,357	14,095	8,741	3,008	33,633
Uneven-aged Management							83	83
Intermediate Harvest								
Commercial Thinning	43,335	29,786	50,047	6,496	16,648	32,725	7,433	186,470
Salvage /Sanitation								
Other Harvest	1,178							1178
Subtotal Acres	44,513	31,344	54,921	7,853	30,743	41,466	10,524	221,364
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			57		98			160
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			1,097					478
Salvage /Sanitation								
Other Harvest	47		99					1168
Subtotal Acres	47	0	1,253	0	98	0	0	1806
Grand total Acres	44,560	31,344	56,174	7,853	30,841	41,466	10,524	223,170

Table B 17. Estimated vegetation management practices alternative E (enhanced forest health) (likely accomplishments for second decade)

Practice	Acres By District							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)	2916	2,113	6,530	1,357	13,705	7,742	3,613	37,976
Uneven-aged Management							88	88
Intermediate Harvest								
Commercial Thinning	34,081	33,133	33,133	6,496	14,736	37,012	10,033	168,624
Salvage /Sanitation								
Other Harvest								
Subtotal Acres	36,997	35,246	39,663	7,853	28,441	44,754	13,734	206,688
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)					84			84
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			408		11			419
Salvage /Sanitation								
Other Harvest			1,117					1,117
Subtotal Acres		0	1,525	0	95	0	0	1,525
Grand total Acres	36,997	35,246	41,188	7,853	28,536	44,754	13,734	208,213

B.2.4 Allowable Sale Quantity (ASQ); Timber Sale Program Quantity (TSPQ); Culmination of Mean Annual Increment (CMAI)

The following tables show the estimated outputs (MMBF - million board feet, and MMCF - million cubic feet) from the harvesting described in the previous section for the first two decades of plan implementation for five alternatives. The allowable sale quantity (ASQ) is the maximum volume that can be harvested on lands suitable for timber production over the first decade. The timber sale program quantity (TSPQ) is the volume harvested from lands suitable for timber production, along with the estimate of volume harvested to meet other resource objectives on lands not suitable for timber production.

Harvesting may occur on lands that are not suitable for timber production. This harvesting is included in this estimate to provide info on possible ecological restoration and management needs within Experimental Forests, harvests to restore prairies or other special areas and habitat improvement within possible old growth.

Regeneration harvests are limited to stands that have reached the culmination of mean annual increment (CMAI). Culmination of mean annual increment of cubic volume does not occur at a precisely predetermined age. It varies by species, site quality and by management practices applied to stands. For natural even-aged stands of loblolly, shortleaf and slash pine the mean annual increment (MAI) peaks at about age 35. For longleaf, however, the peak occurs later at about age 50 (Farrar 1982). Other publications indicate that mean annual increment peaks for loblolly and slash plantations earlier between 20 to 27 years for loblolly and 18 to 25 years for slash (Sullivan and Williston 1977), (Baldwin and Feduccia 1987), (Bennett 1963). Culmination of mean annual increment for hardwoods is later than for pine species. Data on upland oak indicated a peak of mean annual increment at age 70 for managed stands of upland oak (Utz and Sims 1981). A high percentage of National Forests in Mississippi hardwood stands occur in minor stream bottoms, lower slopes or floodplains. These sites are likely to sustain higher levels of growth than those reported by Utz and Sims. The culmination of mean annual increment for hardwood on these sites is likely to be as late as age 90.

Table B 18. Timber sale program quantity in million cubic feet (MMCF) alternative A (custodial) (likely volume outputs for first decade)

Practice	Timber sale program quantity (TSPQ) by district							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)		0.5	1.3	0	0	0	0	1.8
Uneven-aged Management	0	0	0	0	0	0	0	0
Intermediate Harvest								
Commercial Thinning	29.3	11.8	10.6	0	0	20.1	0	71.8
Salvage /Sanitation								
Other Harvest	1.0							1
Total (MMBF)	151.5	61.5	59.5	0	0	100.5	0	373.0
Total (MMCF)	30.3	12.3	11.9	0	0	20.1	0	74.6
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)								
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning								
Salvage /Sanitation								
Other Harvest			0.1					0.1
Total (MMBF)	0	0	0.5	0		0	0	0.5
Total (MMCF)	0	0	0.1	0		0	0	0.1
Grand Total (MMBF)	151.5	61.5	60.0	0	0	100.5	0	373.5
Grand Total (MMCF)	30.3	12.3	12.0	0	0	20.1	0	74.7

Table B 19. Timber sale program quantity in million cubic feet (MMCF) alternative A (custodial) (likely volume outputs for second decade)

Practice	Timber sale program quantity (TSPQ) by district							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)		0.5	1.0	0	0	0	0	1.5
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning	29.1	11.8	11.5	0	0	20.1	0	72.5
Salvage /Sanitation								
Other Harvest	1							1
Total (MMBF)	150.5	61.5	62.5	0	0	100.5	0	375
Total (MMCF)	30.1	12.3	12.5	0	0	20.1	0	75
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)								
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			0.1					0.1
Salvage /Sanitation								
Other Harvest			0.2					0.2
Total (MMBF)	0	0	1.5	0	0	0	0	1.5
Total (MMCF)	0	0	0.3	0	0	0	0	0.3
Grand Total (MMBF)	150.5	61.5	64.0	0	0	100.5	0	376.5
Grand Total (MMCF)	30.1	12.3	12.8	0	0	20.1	0	75.3

Table B 20. Timber sale program quantity in million cubic feet (MMCF) alternative B (no action) (likely volume outputs for first decade)

Practice	Timber sale program quantity (TSPQ) by district							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)	0	2.4	8.7	.2	7.0	12.5	2.1	32.9
Uneven-aged Management	0	0	0	0	0	0	0	0
Intermediate Harvest								
Commercial Thinning	17.6	17.2	10.5	2.8	6.1	26.5	4.4	85.1
Salvage /Sanitation								
Other Harvest	1.9							1.9
Total (MMBF)	97.5	98.0	96	15.0	65.5	195	32.5	599.5
Total (MMCF)	19.5	19.6	19.2	3.0	13.1	39.0	6.5	119.9
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			0.1					0.1
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			0.1					0.1
Salvage /Sanitation								
Other Harvest	0.1							0.1
Total (MMBF)	0.5	0	1.0	0	0	0	0	1.5
Total (MMCF)	0.1	0	0.2	0	0	0	0	0.3
Grand Total (MMBF)	98.0	98.0	97	15.0	65.5	195	32.5	601.0
Grand Total (MMCF)	19.6	19.6	19.4	3.0	13.1	39.0	6.5	120.2

Table B 21. Timber sale program quantity in million cubic feet (MMCF) alternative B (no action) (likely volume outputs for second decade)

Practice	Timber sale program quantity (TSPQ) by district							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)	.1	3.0	8.9	1.8	7.0	14.0	2.7	37.5
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning	18.5	16.3	10.5	4.2	6.2	25.1	3.9	84.7
Salvage /Sanitation								
Other Harvest	1.0							1.0
Total (MMBF)	98	96.5	97	30.0	66.0	195.5	33.0	616.0
Total (MMCF)	19.6	19.3	19.4	6.0	13.2	39.1	6.6	123.2
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			0.1					0.1
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning		0.4	0.1					0.5
Salvage /Sanitation								
Other Harvest	0.1							0.1
Total (MMBF)	0.5	2.0	1.0	0	0	0	0	3.5
Total (MMCF)	0.1	0.4	0.2	0	0	0	0	0.7
Grand Total (MMBF)	98.5	98.5	98.0	30.0	66.0	195.5	33.0	619.5
Grand Total (MMCF)	19.7	19.7	19.6	6.0	13.2	39.1	6.6	123.9

Table B 22. Timber sale program quantity in million cubic feet (MMCF) alternative C (proposed action) (likely volume outputs for first decade)

Practice	Timber sale program quantity (TSPQ) by district							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)		3.5	12.9	1.6	10.6	19.8	3.6	52.0
Uneven-aged Management	0	0	0	0	0	0	0.1	0.1
Intermediate Harvest								
Commercial Thinning	27.3	20.5	16.2	3.3	9.5	40.2	6.8	123.8
Salvage /Sanitation								
Other Harvest	2.8							2.8
Total (MMBF)	150.5	120.0	145.5	24.5	100.5	300	52.5	893.5
Total (MMCF)	30.1	24.0	29.1	4.9	20.1	60.0	10.5	178.7
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)					0.3			0.3
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			0.1					0.1
Salvage /Sanitation								
Other Harvest	0.2		1.9					2.1
Total (MMBF)	1.0	0	10	0	1.5	0	0	12.5
Total (MMCF)	0.2	0	2.0	0	0.3	0	0	2.5
Grand Total (MMBF)	151.5	120	155.5	24.5	102.0	300	52.5	906.0
Grand Total (MMCF)	30.3	24.0	31.1	4.9	20.4	60	10.5	181.2

Table B 23. Timber sale program quantity in million cubic feet (MMCF) alternative C (proposed action) (likely volume outputs for second decade)

Practice	Timber sale program quantity (TSPQ) by district							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)	3.0	4.2	12.1	1.5	10.5	19.8	3.6	54.7
Uneven-aged Management							.1	.1
Intermediate Harvest								
Commercial Thinning	27.2	19.9	16.5	3.5	9.6	40.5	6.8	124.0
Salvage /Sanitation								
Other Harvest								
Total (MMBF)	151.0	120.5	143	25.0	100.5	301.5	52.5	894
Total (MMCF)	30.2	24.1	28.6	5.0	20.1	60.3	10.5	178.8
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			0.2		0.1			0.3
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			0.1		0.1			0.2
Salvage /Sanitation								
Other Harvest			1.9					1.9
Total (MMBF)	0	0	11	0	1.0	0	0	12.0
Total (MMCF)	0	0	2.2	0	0.2	0	0	2.4
Grand Total (MMBF)	151.0	120.5	154.0	25.0	101.5	301.5	52.5	906
Grand Total (MMCF)	30.2	24.1	30.8	5.0	20.3	60.3	10.5	181.2

Table B 24. Timber sale program quantity in million cubic feet (MMCF) alternative D (accelerated restoration) (likely volume outputs for first decade)

Practice	Timber sale program quantity (TSPQ) by district							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)		11.3	19.7	1.6	16.1	34.0	8.3	91.0
Uneven-aged Management	0	0	0	0	0	0	0.1	0.1
Intermediate Harvest								
Commercial Thinning	35.0	12.5	13.6	3.4	7.7	30.0	1.7	103.9
Salvage /Sanitation								
Other Harvest	5.0							5.0
Total (MMBF)	200.0	119.0	166.5	25.0	119.0	320.0	50.5	1000
Total (MMCF)	40.0	23.8	33.3	5.0	23.8	64.0	10.1	200.0
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			0.2		0.2			0.4
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning		0.1	0.2					0.3
Salvage /Sanitation								
Other Harvest	0.2		1.4					1.6
Total (MMBF)	1.0	0.5	9.0	0	1.0	0	0	11.5
Total (MMCF)	.2	0.1	1.8	0	0.2	0	0	2.3
Grand Total (MMBF)	201.0	119.5	175.5	25.0	120.0	320.0	50.5	1011.5
Grand Total (MMCF)	40.2	23.9	35.1	5.0	24.0	64.0	10.1	202.3

Table B 25. Timber sale program quantity in million cubic feet (MMCF) alternative D (accelerated restoration) (likely volume outputs for second decade)

Practice	Timber sale program quantity (TSPQ) by district							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)	20.7	8.2	15.5	1.5	15.5	37.5	7.0	105.9
Uneven-aged Management							0.1	0.1
Intermediate Harvest								
Commercial Thinning	19.4	15.5	17.8	3.5	8.3	26.5	5.0	96.0
Salvage /Sanitation								
Other Harvest								
Total (MMBF)	200.5	118.5	166.5	25.0	119.0	320.0	60.5	1010.0
Total (MMCF)	40.1	23.7	33.3	5.0	23.8	64.0	12.1	202.0
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			0.2		0.2			0.4
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning		0.3	0.3					0.6
Salvage /Sanitation								
Other Harvest			1.2					1.2
Total (MMBF)	0	1.5	8.5	0	1.0	0	0	11.0
Total (MMCF)	0	0.3	1.7	0	0.2	0	0	2.2
Grand Total (MMBF)	200.5	120.0	175.0	25.0	120.0	320.0	60.5	1021.0
Grand Total (MMCF)	40.1	24.0	35.0	5.0	24.0	64.0	12.1	204.2

Table B 26. Timber sale program quantity in million cubic feet (MMCF) alternative E (enhanced forest health) (likely volume outputs for first decade)

Practice	Timber sale program quantity (TSPQ) by district							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)		3.5	9.7	1.6	21.8	26.0	5.8	68.4
Uneven-aged Management	0	0	0	0	0	0	0.1	0.1
Intermediate Harvest								
Commercial Thinning	45.1	20.5	34.1	3.4	12.1	38.1	9.1	162.4
Salvage /Sanitation								
Other Harvest	4.8							4.8
Total (MMBF)	249.5	120.0	219.0	25.0	169.5	320.5	75.0	1178.5
Total (MMCF)	49.9	24.0	43.8	5.0	33.9	64.1	15.0	235.7
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			0.2		0.2			0.4
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			0.5					0.5
Salvage /Sanitation								
Other Harvest	0.2		0.1					0.3
Total (MMBF)	1.0	0	4.0	0	1.0	0	0	6
Total (MMCF)	.2	0	.8	0	.2	0	0	1.2
Grand Total (MMBF)	250.5	120.0	223.0	25.0	170.5	320.5	75.0	1184.5
Grand Total (MMCF)	50.1	24.0	44.6	5.0	34.1	64.1	15.0	236.9

Table B 27. Timber sale program quantity in million cubic feet (MMCF) alternative E (enhanced forest health) (likely volume outputs for second decade)

Practice	Timber sale program quantity (TSPQ) by district							
Lands where timber production achieves, or is compatible with desired conditions and objectives								
	Bienville	**Chickasawhay**	**DeSoto**	**Delta**	**Holly Springs**	**Homochitto**	**Tombigbee**	**Total**
Regeneration Cutting (even- or two-aged)	14.7	4.2	9.6	1.5	22.3	21.0	6.1	79.4
Uneven-aged Management							0.1	0.1
Intermediate Harvest								
Commercial Thinning	35.3	19.9	34.1	3.5	11.6	43.1	8.9	156.4
Salvage /Sanitation								
Other Harvest								
Total (MMBF)	250.0	120.5	218.5	25.0	169.5	320.5	75.5	1179.5
Total (MMCF)	50.0	24.1	43.7	5.0	33.9	64.1	15.1	235.9
Lands not suited for timber production								
Regeneration Cutting (even- or two-aged)			0.1		0.2			0.3
Uneven-aged Management								
Intermediate Harvest								
Commercial Thinning			0.5					0.5
Salvage /Sanitation								
Other Harvest			0.1					
Total (MMBF)	0	0	3.5	0	1.0	0	0	4.5
Total (MMCF)	0	0	0.7	0	0.2	0	0	0.9
Grand Total (MMBF)	250.0	120.5	222.0	25.0	170.5	320.5	75.5	1184.0
Grand Total (MMCF)	50.0	24.1	44.4	5.0	34.1	64.1	15.1	236.8

Product Mix

The current mix of timber products as tracked in the Forest Service transaction evidence evaluation database was used to estimate products likely to be produced from the Timber Sale Program Quantity of each alternative. The volumes modeled were cubic foot volumes not broken into products to estimate summaries and totals in the tables above. The transaction evidence evaluation database has historical data that is used in the Forest Service appraisal process for timber sales. The recent sales product mix was applied as percentages to the forestwide volumes above to estimate the products likely to be produced. These product outcomes are displayed by alternative in the following table.

Table B 28. Timber sale program quantity (TSPQ) product mix for the National Forests in Mississippi (first decade) in million cubic feet (MMCF)

		Alternative A Custodial	Alternative B No Action	Alternative C Proposed Action	Alternative D Accelerated Restoration	Alternative E Enhanced Forest Health
TSPQ (MMCF)		**75**	**120**	**181**	**202**	**237**
Products	**Product Mix Percentage**					
Pine Sawtimber	46 %	35	55	83	93	109
Pine Pulpwood	40 %	30	48	72	81	95
Hardwood Sawtimber	4 %	3	5	7	8	9
Hardwood Pulpwood	9 %	7	11	16	18	21

B.2.5 Long-term Sustained Yield and Allowable Sale Quantity

The long-term sustained yield for the National Forests in Mississippi is the same for all alternatives. The long-term sustained yield does not change by alternative because desired future condition and silvicultural strategies for management are the same in all alternatives. The alternatives differ mostly in level of program based on resources available and some variation in which harvest methods to utilize in moving toward the desired conditions. The following chart depicts a long-term sustained yield of 307 million cubic feet per decade for lands suitable for timber production. The allowable sale quantity of each alternative analyzed for the National Forests in Mississippi is projected to be almost level and less than the long-term sustained yield for the 5 decades modeled. The allowable sale quantity is level in the alternative projections because the program level is constrained to an assumed level budget and program implementation capability for each alternative. The proposed action allowable sale quantity is approximately 179 million cubic feet per decade. The custodial alternative allowable sale quantity is approximately 74 million cubic feet per decade. The no-action alternative allowable sale quantity is approximately 120 million cubic feet per decade. The accelerated restoration alternative allowable sale quantity is approximately 202 million cubic feet per decade. The enhanced forest health alternative allowable sale quantity is approximately 236 million cubic feet per decade.

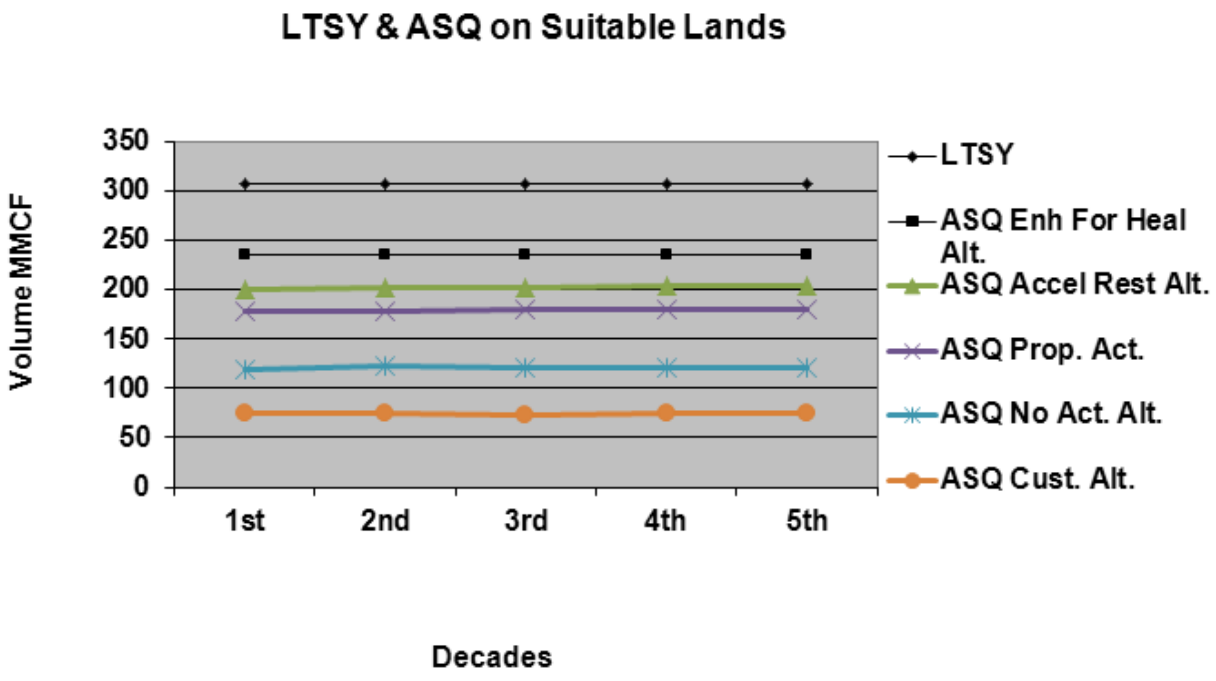


Figure B 1. Long term sustained yield (LTSY) and allowable sale quantity (ASQ) on suitable lands

The USDA Forest Service Southern Research Station Forest Inventory and Analysis 2006 report on Mississippi's forests indicates that the National Forest System Lands in Mississippi have an average net annual growth of 71.4 million cubic feet (Oswalt et al. 2009). This same report estimated average annual removals at 42.2 million cubic feet. Therefore the gross growth per decade for National Forest System Lands in Mississippi based on Southern Research Station Forest Inventory and Analysis has been 1,136 million cubic feet.

B.2.6 Description of Anticipated Changes and Treatments by Vegetation Type

The changes in forest conditions through time and acres of harvest treatments were modeled utilizing a spreadsheet to develop information for the alternatives as described in section B.1. This section provides a summary of the outcomes for the first and second decade from that modeling effort. These outcomes are referred to as proposed and probable respectively by decade. Changes in vegetation classification, harvest treatments and age conditions are displayed for each vegetation classification.

Upland Longleaf Pine Forest

First thinning, subsequent thinning, and woodland thinning were identified as important management activities to promote and maintain the desired ecosystem structural conditions in longleaf system. In threatened and endangered species habitat areas, thinning treatments are the highest priority vegetation treatments because they help create optimal habitat conditions for species recovery. The following series of tables project the proposed level of acres of these activities during the first decade and the probable acres during the second decade for each of the alternatives.

Table B 29. Longleaf forest timber treatments by alternative

	First Thinning		Subsequent Thinning		Woodland Thinning		Totals	
Alternative	**Proposed 1st Decade**	**Probable 2nd Decade**	**Proposed 1st Decade**	**Probable 2nd Decade**	**Proposed 1st Decade**	**Probable 2nd Decade**	**Proposed 1st Decade**	**Probable 2nd Decade**
Alternative A Custodial	3,783	7,391	10,266	15,584	4,877	1,794	18,926	24,769
Alternative B No Action	3,038	6,287	20,718	19,564	0	0	23,756	25,851
Alternative C Proposed Action	4,202	6,965	25,100	30,573	4,418	1,563	33,720	39,101
Alternative D Accelerated Restoration	5,183	11,864	12,759	28,668	7,467	2,851	25,409	43,383
Alternative E Enhanced Forest Health	7,838	12,669	26,747	35,773	9,161	4,674	43,746	53,116

Restoration of the longleaf pine forest ecological system to appropriate sites is the highest priority for long-term sustainability of this ecological system. The acres of forest in regeneration (0-10 years) and mature condition (age 60 plus) are important for evaluating ecological viability of each system. The following series of tables project the proposed level of longleaf pine forest and woodland in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives. The acres in regeneration are all the result of conversion from loblolly and slash pine.

Table B 30. Longleaf pine forest age structure after 1st and 2nd decades

	Acres of Longleaf Pine		Acres in Regeneration		Acres of Mature Forest	
Alternative	**Proposed 1st Decade**	**Probable 2nd Decade**	**Proposed 1st Decade**	**Probable 2nd Decade**	**Proposed 1st Decade**	**Probable 2nd Decade**
Alternative A Custodial	238,876	239,802	847 (0.4%)	927 (0.4%)	152,776 (64%)	160,572 (67%)
Alternative B No Action	246,660	256,777	8,632 (3.5%)	10,118 (3.9%)	152,775 (62%)	160,571 (63%)
Alternative C Proposed Action	251,152	267,111	13,125 (5.2%)	15,959 (6.0%)	152,775 (61%)	160,571 (60%)
Alternative D Accelerated Restoration	261,285	287,942	23,256 (8.9%)	26,658 (9.3%)	152,775 (58%)	160,571 (56%)
Alternative E Enhanced Forest Health	251,705	268,389	13,678 (5.4%)	16,682 (6.2%)	152,775 (61%)	160,571 (60%)

Shortleaf Pine Forest

First thinning, subsequent thinning, even-aged and uneven aged regeneration were identified as important management activities to promote and maintain the desired ecosystem structural conditions for the shortleaf system. The following series of tables project the proposed level of acres of these activities during the first decade and the probable acres during the second decade for each of the alternatives.

Table B 31. Shortleaf pine forest timber harvest treatments

	First Thin		Subsequent Thinning		Woodland Thinning		Even-aged Regen.		Uneven-aged Management		Totals	
	Decade											
Alternative	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**
Alternative A Custodial	50	18	1,016	739	0	0	0	0	0	0	1,066	757
Alternative B No Action	413	189	2,515	2,044	0	0	638	730	0	0	3,566	2,963
Alternative C Proposed Action	647	330	3,425	2,787	64	36	1,409	1,403	16	14	5,561	4,570
Alternative D Accelerated Restoration	492	553	2,381	2,159	355	455	343	342	16	17	3,587	3,526
Alternative E Enhanced Forest Health	558	513	5,860	4,705	0	382	2,773	3,401	16	17	9,207	9,018

Restoration of the shortleaf pine forest ecological system to appropriate sites is the highest priority for long-term sustainability of this ecological system. The acres of forest in regeneration (0-10 years) and mature condition (age 60 plus years) are important for evaluating ecological viability of each system. The following series of tables project the proposed level of shortleaf pine forest and woodland in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives. Regeneration acres represent acres converted from loblolly pine as well as even-aged regeneration of shortleaf pine. There are a minor amount of slash pine acres on the Holly Springs and Tombigbee districts. Slash pine was not modeled separately for these units. Slash pine conversion to shortleaf is included in the upland loblolly acres and should be given priority to convert. The values represent a decadal total.

Table B 32. Shortleaf pine forest age structure after 1st and 2nd decades

	Total Acres of Shortleaf Pine-Oak		Acres in Regeneration		Acres of Mature Forest	
Alternative	**Proposed 1st Decade**	**Probable 2nd Decade**	**Proposed 1st Decade**	**Probable 2nd Decade**	**Proposed 1st Decade**	**Probable 2nd Decade**
Alternative A Custodial	59,139	59,139	0	0	48,960 (83%)	50,036 (85%)
Alternative B No Action	60,819	62,915	2,346 (3.9%)	2,826 (4.5%)	50,368 (83%)	48,640 (77%)
Alternative C Proposed Action	61,815	64,497	4,033 (6.5%)	4,085 (6.3%)	41,121 (67%)	47,196 (73%)
Alternative D Accelerated Restoration	68,049	75,438	9,281 (13.6%)	7,669 (10.2%)	48,589 (71%)	49,322 (65%)
Alternative E Enhanced Forest Health	66,616	73,267	10,279 (15.4%)	10,075 (13.8%)	46,159 (69%)	43,831 (60%)

Upland Loblolly Pine Forest

Overabundance of the upland loblolly pine forest ecological system on the landscape is the most important characteristic of this system. Conversion of most of the loblolly pine forest ecological system to appropriate ecological systems is a high priority for long-term sustainability of the forest. The following series of tables project the proposed level of acres converted by regeneration to appropriate ecological systems during the first decade and the probable acres during the second decade for each of the alternatives. The values represent a decadal total.

Table B 33.Upland loblolly pine forest conversion

	Acres Converted	
Alternative	**1st Decade**	**2nd Decade**
Alternative A Custodial	431	478
Alternative B No Action	8,728	10,507
Alternative C Proposed Action	14,246	15,753
Alternative D Accelerated Restoration	29,928	31,745
Alternative E Enhanced Forest Health	22,890	22,847

First thinning, subsequent thinning, even-aged and uneven-aged regeneration were identified as important management activities to promote and maintain the desired ecosystem structural conditions of upland loblolly pine. The following series of tables project the proposed level of acres of these activities during the first decade and the probable acres during the second decade for each of the alternatives. The even aged regeneration acres include acres harvested to convert to appropriate tree species, but not prairie restoration on the Bienville.

Table B 34. Upland loblolly pine forest timber harvest treatments

	First Thinning		Subsequent Thinning		Even-aged Regeneration		Uneven-aged Management		Totals	
	Decade									
Alternative	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Alt. A Cust.	12,884	7,573	14,938	20,665	143	190	0	0	27,965	28,428
Alt. B No Act.	17,083	14,052	18,520	18,339	9,315	10,787	0	0	44,918	43,178
Alt. C Proposed	25,827	22,580	27,471	34,128	13,963	16,313	38	36	67,299	73,057
Alt. D Accel. Rest.	21,990	10,838	23,538	30,850	29,139	32,245	40	0	74,707	73,933
Alt. E Enh. F.H.	25,587	22,594	37,913	46,666	22,101	22,947	40	7	85,641	92,214

The acres of forest in regeneration (0-10 years) and mature condition (age 60 plus) are important for evaluating ecological viability of each system. The following series of tables project the proposed level of upland loblolly pine forest in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives. Regeneration acres represent acres harvested but not converted from loblolly pine to shortleaf or longleaf pine. The values represent a decadal total.

Table B 35. Upland loblolly pine forest age structure after 1st and 2nd decade

	Total Acres of Upland Loblolly Pine Forest		Acres in Regeneration		Acres of Mature Forest	
Alternative	1st Decade	2nd Decade	1st Decade	2nd Decade	1st Decade	2nd Decade
Alternative A Custodial	299,317	298,807	0	0	135,502 (45%)	152,609 (51%)
Alternative B No Action	291,042	280,534	1094 (0.4%)	508 (0.2%)	126,016 (43%)	133,104 (47%)
Alternative C Proposed Action	286,524	269,770	506 (<0.2%)	557 (0.2%)	121,965 (43%)	122,818 (46%)
Alternative D Accelerated Restoration	277,087	251,139	313 (0.1%)	339 (0.1%)	114,162 (41%)	104,860 (42%)
Alternative E Enhanced Forest Health	276,880	253,906	0	5 (0.002%)	120,446 (44%)	113,982 (45%)

Mesic Loblolly Pine Forest

Overabundance of the mesic loblolly pine forest ecological system on the landscape is the most important characteristic of this system. Conversion of most of the mesic loblolly pine forest ecological system to appropriate ecological systems is a high priority for long-term sustainability of the forest. An exception to

this conversion emphasis would be to retain mesic loblolly in red cockaded-woodpecker habitat management areas rather than convert to hardwood dominated overstory conditions not suitable for the woodpecker. The following series of tables project the proposed level of acres converted by regeneration to appropriate ecological systems during the first decade and the probable acres during the second decade for each of the alternatives. The values represent a decadal total.

Table B 36. Mesic loblolly pine forest conversion

	Acres Converted	
Alternative	**1st Decade**	**2nd Decade**
Alternative A Custodial	60	57
Alternative B No Action	696	624
Alternative C Proposed Action	1,183	1,304
Alternative D Accelerated Restoration	2,424	2,856
Alternative E Enhanced Forest Health	1,983	2,053

First thinning, subsequent thinning, even-aged and uneven-aged regeneration were identified as important management activities to promote and maintain the desired ecosystem structural conditions. The following series of tables project the proposed level of acres of these activities during the first decade and the probable acres during the second decade for each of the alternatives. The even aged regeneration acres include acres harvested to convert to appropriate tree species.

Table B 37. Mesic loblolly pine forest timber harvest treatments

	First Thinning		Subsequent Thinning		Even-aged Regeneration		Uneven-aged Management		Totals	
	Decade									
Alternative	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**
Alt. A Cust.	7,289	4,398	10,624	12,167	60	57	0	0	17,973	16,622
Alt. B No Act.	6,811	6,557	9,278	9,167	696	624	0	0	16,785	16,348
Alt. C Proposed	10,512	10,618	14,144	13,732	618	2,075	14	13	25,288	26,438
Alt. D Accel. Rest.	8,546	2,916	14,117	10,458	3,172	2,856	8	10	25,843	16,240
Alt. E Enh. F.H.	11,019	5,358	18,891	17,506	1,983	2,054	8	10	31,901	24,928

The acres of forest in regeneration (0-10 years) and mature condition (age 60 plus) are important for evaluating ecological viability of each system. The following series of tables project the proposed level of mesic loblolly pine forest in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives. Regeneration acres represent acres harvested but not converted from loblolly pine to mesic slope hardwood forest or longleaf pine. The values represent a decadal total.

Table B 38. Mesic loblolly pine forest age structure after 1st and 2nd decade

	Total Acres of Mesic Loblolly Pine Forest		Acres in Regeneration		Acres of Mature Forest	
Alternative	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**
Alternative A Custodial	143,109	143,043	0	0	90,909 (64%)	97,778 (68%)
Alternative B No Action	143,468	142,857	0	0	90,280 (63%)	96,592 (68%)
Alternative C Proposed Action	142,982	141,679	29 (0.02%)	7 (0.004%)	84,021 (59%)	89,817 (63%)
Alternative D Accelerated Restoration	140,993	138,137	0	0	87,804 (62%)	91,883 (67%)
Alternative E Enhanced Forest Health	142,183	140,130	0	1 (0.0007%)	88,995 (63%)	93,878 (67%)

Slash Pine Forest

Overabundance of the slash pine forest ecological system on the landscape is the most important characteristic of this system. Conversion of most of the slash pine forest ecological system to appropriate ecological systems is the highest priority for long-term sustainability of the forest. The following series of tables project the proposed level of acres converted by regeneration to appropriate ecological systems during the first decade and the probable acres during the second decade for each of the alternatives. The values represent a decadal total.

Table B 39. Slash pine forest conversion

	Acres Converted	
Alternative	**1st Decade**	**2nd Decade**
Alternative A Custodial	571	603
Alternative B No Action	4,099	4,179
Alternative C Proposed Action	5,307	6,059
Alternative D Accelerated Restoration	9,219	7,804
Alternative E Enhanced Forest Health	4,296	5,085

First thinning and subsequent thinning were identified as important management activities to promote and maintain the desired ecosystem structural conditions. The following series of tables project the proposed level of acres of these activities during the first decade and the probable acres during the second decade for each of the alternatives. The even aged regeneration acres include acres harvested to convert to appropriate tree species.

Table B 40. Slash pine forest timber harvest treatments

	First Thinning		Subsequent Thinning		Even-aged Regeneration		Totals	
Alternative	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**
Alternative A Custodial	7,289	4,398	10,624	12,167	60	57	0	0
Alternative B No Action	6,811	6,557	9,278	9,167	696	624	0	0
Alternative C Proposed Action	10,512	10,618	14,144	13,732	618	2,075	14	13
Alternative D Accelerated Restoration	8,546	2,916	14,117	10,458	3,172	2,856	8	10
Alternative E Enhanced Forest Health	11,019	5,358	18,891	17,506	1,983	2,054	8	10

The acres of forest in regeneration (0-10 years) and mature condition (age 60 plus) are important for evaluating ecological viability of each system. The following series of tables project the proposed level of slash pine forest in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives. Regeneration acres represent acres harvested but not converted from slash pine to mesic slope hardwood forest or longleaf pine. The values represent a decadal total.

Table B 41. Slash pine forest age structure after 1st and 2nd decade

	Total Acres of Slash Pine Forest		Acres in Regeneration		Acres of Mature Forest	
Alternative	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**
Alternative A Custodial	114,231	113,592	0	0	41,972 (37%)	55,621 (49%)
Alternative B No Action	110,745	106,566	0	0	40,061 (36%)	49,883 (47%)
Alternative C Proposed Action	109,537	103,479	0	0	39,052 (34%)	48,108 (46%)
Alternative D Accelerated Restoration	105,625	97,820	0	0	36,006 (34%)	42,875 (44%)
Alternative E Enhanced Forest Health	110,547	105,463	0	0	39,358 (36%)	48,948 (46%)

Northern Dry Upland Hardwood Forest

First thinning, subsequent thinning and gap creation, and irregular even-aged regeneration were identified as important management activities to promote and maintain the desired ecosystem structural conditions.

The following series of tables project the proposed level of acres of these activities during the first decade and the probable acres during the second decade for each of the alternatives.

Table B 42. Northern dry upland hardwood forest timber harvest treatments

	First Thinning		Subsequent Thinning		Woodland Thinning		Irregular Even-aged Regeneration		Uneven-aged Management		Totals	
	Decade											
Alt.	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Alt. A Cust.	0	0	0	0	0	0	0	0	0	0	0	0
Alt. B No Act.	277	108	874	1,649	0	0	967	429	0	0	2,118	2,186
Alt. C Proposed	435	128	1,236	2,006	24	64	1,538	1,354	11	11	3,244	3,563
Alt. D Accel. Rest.	272	100	820	1,677	182	55	75	647	18	22	1,367	2,501
Alt. E Enh. F.H.	244	90	8,339	5,643	0	461	2,138	2,510	18	22	10,739	8,726

Restoration to appropriate sites is the highest priority for long-term sustainability of this ecological system. The acres of forest in regeneration (0-10 years) and mature condition (age 60 plus) are important for evaluating ecological viability of each system. The following series of tables project the proposed level of northern dry upland hardwood forest and woodland in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives. Regeneration acres represent acres converted from loblolly pine as well as even-aged regeneration of northern dry upland hardwood. The values represent a decadal total.

Table B 43. Northern dry upland hardwood forest age structure after 1st and 2nd decades

	Total Acres of Northern Dry Upland Hardwood		Acres in Regeneration		Acres of Mature Forest	
Alternative	1st Decade	2nd Decade	1st Decade	2nd Decade	1st Decade	2nd Decade
Alternative A Custodial	52,376	52,376	0	0	49,098 (94%)	49,730 (95%)
Alternative B No Action	54,084	56,180	2011 (3.7%)	1,687 (3.0%)	48,132 (89%)	48,335 (86%)
Alternative C Proposed Action	56,021	57,670	3,186 (5.7%)	3,010 (5.2%)	47,562 (85%)	46,840 (81%)
Alternative D Accelerated Restoration	58,816	62,478	4,520 (7.7%)	4,310 (6.9%)	49,023 (83%)	49,008 (78%)
Alternative E Enhanced Forest Health	57,762	60,947	5,528 (9.6%)	5,696 (9.3%)	46,960 (81%)	45,082 (74%)

Southern Dry Upland Hardwood and Southern Loess Bluff Forest

Restoration of the southern dry upland hardwood forest and southern loess bluff forest ecological system to appropriate sites is important for long-term sustainability of this ecological system. No management activities were identified as a priority for the first decade to promote and maintain the desired ecosystem structural conditions; rather this system will use natural processes to reach the desired condition. Some restoration of upland loblolly to southern loess bluff forest was modeled on the Homochitto.

The acres of forest in regeneration (0-10 years) and mature condition (age 60 plus) are important for evaluating ecological viability of each system. The following series of tables project the proposed level of northern dry upland hardwood forest and woodland in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives. The values represent a decadal total.

Table B 44. Southern dry upland hardwood forest age structure after 1st and 2nd decades

	Total Acres of Southern Dry Upland Hardwood		Acres in Regeneration		Acres of Mature Forest	
Alternative	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**
Alternative A Custodial	52,030	52,724	517 (1.0%)	694 (1.3%)	46,405 (89%)	48,008 (91%)
Alternative B No Action	51,768	52,118	284 (0.5%)	350 (0.7%)	46,382 (90%)	47,987 (92%)
Alternative C Proposed Action	51,997	52,691	517 (1.0%)	694 (1.3%)	46,379 (89%)	47,984 (91%)
Alternative D Accelerated Restoration	52,570	53,994	1,086 (2.1%)	1,424 (2.6%)	46,382 (88%)	47,986 (89%)
Alternative E Enhanced Forest Health	52,425	53,244	941 (1.8%)	819 (1.5%)	46,382 (88%)	47,986 (90%)

Southern Mesic Slope Forest

Restoration of the southern mesic slope hardwoods ecological system to appropriate sites is important for long-term sustainability of this ecological system. No management activities were identified as a priority for the first decade to promote and maintain the desired ecosystem structural conditions; rather this system will use natural processes to reach the desired condition. Some restoration of loblolly and slash pine to southern mesic slope hardwoods was modeled on the DeSoto and Homochitto.

The acres of forest in regeneration (0-10 years) and mature condition (age 60 plus) are important for evaluating ecological viability of each system. The following series of tables project the proposed level of southern mesic slope hardwoods in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives. The values represent a decadal total.

Table B 45. Southern mesic slope hardwood forest age structure after 1st and 2nd decades

	Total Acres of Southern Mesic Slope Hardwood		Acres in Regeneration		Acres of Mature Forest	
Alternative	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**
Alternative A Custodial	15,833	15,833	0	0	14,601 (92%)	14,872 (94%)
Alternative B No Action	16,465	17,009	632 (3.8%)	544 (3.2%)	14,601 (89%)	14,872 (87%)
Alternative C Proposed Action	16,551	17,361	718 (4.3%)	809 (4.7%)	14,601 (88%)	14,872 (86%)
Alternative D Accelerated Restoration	17,496	18,889	1,663 (9.5%)	1,393 (7.4%)	14,601 (83%)	14,872 (79%)
Alternative E Enhanced Forest Health	16,822	17,825	989 (5.9%)	1003 (5.6%)	14,601 (87%)	14,872 (83%)

Northern Mesic Hardwood Forest

Restoration to appropriate sites is the highest priority for long-term sustainability of this ecological system.

First thinning, subsequent thinning and gap creation, irregular even-aged regeneration and uneven-aged regeneration were identified as important management activities to promote and maintain the desired ecosystem structural conditions. The following series of tables project the proposed level of to northern mesic slope hardwoods in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives.

Table B 46. Northern mesic hardwood forest timber harvest treatments

	First Thinning		Subsequent Thinning		Irregular Even-aged Regeneration		Uneven-aged Management		Totals	
	Decade									
Alt.	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**
Alt. A Cust.	0	0	0	0	0	0	0	0	0	0
Alt. B No Act.	12	0	100	103	39	27	0	0	151	130
Alt. C Proposed	19	0	108	207	63	104	1	2	191	313
Alt. D Accel. Rest.	12	2	27	99	62	17	0	0	101	118
Alt. E Enh. F.H.	11	52	178	239	0	80	2	3	191	321

The acres of forest in regeneration (0-10 years) and mature condition (age 60 plus) are important for evaluating ecological viability of each system. The following series of tables project the proposed level of to northern mesic slope hardwoods in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives. The values represent a decadal total by management unit and regeneration acres represent acres converted from loblolly pine and irregular even-aged regeneration of hardwoods.

Table B 47. Northern mesic hardwood forest age structure after 1st and 2nd decades

	Total Acres of Northern Mesic Hardwood		Acres in Regeneration		Acres of Mature Forest	
Alternative	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**
Alternative A Custodial	3,568	3,568	0	0	3,051	3,176
Alternative B No Action	3,782	4,003	253 (6.7%)	248 (6.2%)	3,110 (82%)	3,110 (78%)
Alternative C Proposed Action	3,879	4,160	373 (9.6%)	385 (9.3%)	2,988 (77%)	3,009 (72%)
Alternative D Accelerated Restoration	4,248	4,838	742 (17.5%)	608 (12.6%)	2,989 (70%)	3,081 (63.7%)
Alternative E Enhanced Forest Health	3,981	4,417	413 (10.4%)	512 (11.6%)	3,051 (77%)	3,099 (70%)

Floodplain Forest

Restoration to appropriate sites is the highest priority for long-term sustainability of this ecological system. Restoration to this ecological system will be conversion from loblolly slash, and shortleaf pine forest. Both managed and natural thinning of pines will favor floodplain hardwoods over time as well.

First thinning, subsequent thinning and gap creation, irregular even-aged and uneven-aged regeneration were identified as important management activities to promote and maintain the desired ecosystem structural conditions on the Holly Springs and Tombigbee Districts. No management activities were identified as a priority for the other districts on the Forest to promote and maintain the desired ecosystem structural conditions; rather natural processes will allow floodplain forests on these units to reach the desired condition. The following series of tables project the proposed level of to floodplain hardwoods in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives.

Table B 48. Floodplain hardwood forest timber harvest treatments

	First Thinning		Subsequent Thinning		Irregular Even-aged Regeneration		Uneven-aged Management		Totals	
	Decade									
Alt.	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Alt. A Cust.	0	0	0	0	0	0	0	0	0	0
Alt. B No Act.	110	25	267	343	243	114	0	0	620	482
Alt. C Proposed	228	30	363	438	383	535	2	5	976	1,008
Alt. D Accel. Rest.	228	97	284	406	134	153	0	0	646	656
Alt. E Enh. F.H.	0	94	1,076	1,286	124	480	4	6	1,204	1,866

The acres of forest in regeneration (0-10 years) and mature condition (age 60 plus) are important for evaluating ecological viability of each system. The following series of tables project the proposed level of to floodplain forest in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives. Regeneration acres represent acres converted from loblolly and shortleaf pine, and irregular even-aged regeneration of hardwoods. The values represent a decadal total.

Table B 49. Floodplain hardwood forest age structure after 1st and 2nd decades

	Total Acres of Floodplain Hardwood		Acres in Regeneration		Acres of Mature Forest	
Alternative	1st Decade	2nd Decade	1st Decade	2nd Decade	1st Decade	2nd Decade
Alternative A Custodial	96,424	96,424	0	0	88,435 (92%)	89,925 (93%)
Alternative B No Action	96,924	97,366	744 (0.8%)	656 (0.7%)	88,192 (91%)	89,568 (92%)
Alternative C Proposed Action	97,346	98,379	1,305 (1.3%)	1,569 (1.6%)	88,053 (90%)	89,007 (90%)
Alternative D Accelerated Restoration	96,905	97,399	864 (0.9%)	1,029 (1.1%)	88,053 (91%)	89,007 (91%)
Alternative E Enhanced Forest Health	97,885	99,175	1,585 (1.6%)	1,770 (1.8%)	88,312 (90%)	89,321 (90%)

Lower Mississippi River Bottomland and Floodplain Forest

Maintenance and improvement of species composition of the lower Mississippi River bottomland and floodplain forest ecological system on appropriate sites is the highest priority for long-term sustainability of this ecological system.

Thinning and gap creation and irregular even-aged regeneration were identified as important management activities to promote and maintain the desired ecosystem structural conditions during the first decade. The following series of tables project the proposed level of to lower Mississippi River Bottomland and floodplain forest in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives.

Table B 50. Lower Mississippi River bottomland and floodplain forest timber harvest treatments

	First Thinning		Subsequent Thinning		Irregular Even-aged Regeneration		Totals	
Alternative	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**
Alternative A Custodial	0	0	0	0	0	0	0	0
Alternative B No Action	0	0	5,079	4,576	177	951	5,256	5,227
Alternative C Proposed Action	0	0	6,496	7,535	1,357	1,212	7,853	8,747
Alternative D Accelerated Restoration	0	0	6,496	7,535	1,357	1,212	7,853	8,747
Alternative E Enhanced Forest Health	0	0	6,496	7,535	1,357	1,212	7,853	8,747

The acres of forest in regeneration (0-10 years) and mature condition (age 60 plus) are important for evaluating ecological viability of each system. The following series of tables project the proposed level of to lower Mississippi River bottomland and floodplain forest in regeneration and mature structural condition at end of the first decade and the probable acres at end of the second decade for each of the alternatives. The values represent decadal totals.

Table B 51. Lower Mississippi River bottomland and floodplain forest age structure after 1st and 2nd decades

	Total Acres of Lower Mississippi River Bottomland and Floodplain Forest		Acres in Regeneration		Acres of Mature Forest	
Alternative	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**
Alternative A Custodial	59,197	59,197	0	0	42,906 (72%)	45,708 (77%)
Alternative B No Action	59,197	59,197	177 (.3%)	951 (1.6%)	42,729 (72%)	44,579 (75%)
Alternative C Proposed Action	59,197	59,197	1,357 (2.3%)	1,212 (2.0%)	41,549 (70%)	43,139 (73%)
Alternative D Accelerated Restoration	59,197	59,197	1,357 (2.3%)	1,212 (2.0%)	41,549 (70%)	43,139 (73%)
Alternative E Enhanced Forest Health	59,197	59,197	1,357 (2.3%)	1,212 (2.0%)	41,549 (70%)	43,139 (73%)

Near-Coast Pine Flatwoods

Canopy structure is the most important characteristic to species diversity and long-term sustainability of this ecological system. Open conditions with widely scattered longleaf and slash pine trees are critical to the long-term sustainability of this system providing ideal conditions for rare species to flourish. Woodland thins and conversion harvests were identified as important management activities to promote and maintain the desired ecosystem structural conditions. The following series of tables project the proposed level of near-coast pine flatwoods treated at end of the first decade and the probable acres at end of the second decade for each of the alternatives. Many of the acres of this system cannot be treated commercially due to the wet environment; however, non-commercial treatments can be applied as opportunities arise and natural processes will also contribute to achieving desired conditions.

Table B 52. Near-coast pine flatwoods forest timber harvest treatments alternative A (custodial)

	Woodland Thinning		Conversion Harvest		Totals	
Alternative	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**
Alternative A Custodial	125	319	73	116	198	435
Alternative B No Action	0	0	0	0	0	0
Alternative C Proposed Action	226	207	1,109	999	1,335	1,206
Alternative D Accelerated Restoration	1,186	1,254	794	675	1980	1,929
Alternative E Enhanced Forest Health	516	756	99	90	615	846

Xeric Sandhills

Restoration objectives for xeric sandhills are included in conversion of loblolly and slash pine forest to the upland longleaf pine forest and woodland on the Chickasawhay and De Soto Ranger Districts. Xeric sandhills should be given priority when applying treatments within longleaf pine systems. There are approximately 21,750 acres of xeric sandhills on the De Soto and approximately 2,150 acres on the Chickasawhay. The acres of treatment and conditions are included in the longleaf pine forest section above.

Black Belt Calcareous Prairie and Woodland

This rare ecological system represents open grassy areas dominated by characteristic prairie species. Within this grassland matrix, woody vegetation occurs sparingly in stream bottoms and hilltops with caps of acid soil. It occurs on the Trace Unit of the Tombigbee Ranger District. Maintenance of this system may require tree removal, but no harvests are likely. Noncommercial treatment to remove woody vegetation is expected on 315 acres.

Jackson Prairie and Woodland

This rare ecological system represents open grassy areas dominated by characteristic prairie species. Jackson prairie occurs as calcareous islands (<1-160 acres) on gently sloping uplands surrounded by pine and hardwood forest on generally acid soils. It occurs on the Bienville Ranger District. Maintenance of this system is likely to require tree removal. Noncommercial woody vegetation removal is expected on

381 acres. The following tables display proposed harvests in the first decade converting forested prairie soils to open Jackson prairie and the probable acres in the second decade for each of the alternatives.

Table B 53. Conversion to Jackson prairie and woodland

	Upland Loblolly		Shortleaf Pine		Upland Hardwood		Totals	
Alternative	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**	**1st Decade**	**2nd Decade**
Alternative A Custodial	288	288	0	0	0	0	288	288
Alternative B No Action	507	280	28	0	29	0	564	280
Alternative C Prop. Action	789	345	28	0	33	0	849	345
Alternative D Accel. Rest.	789	345	28	0	29	0	846	345
Alternative E Enh. For. H.	789	345	28	0	29	0	846	345

B.2.7 Anticipated Age Class Changes for Each Alternative Tabulated by Vegetation Type

One of the results of the restoration and regeneration harvests implemented under each alternative would be changes in the age class distribution across the Forests.

This section includes tables with age class information from each alternative modeled. The tables display acres within three age groups at the end of the first and fifth decades. The three groups used are 0-10 years, 11-59 years and 60 years and above. These groupings are used because acres in 0-10, and 60 plus age classes were important components of the ecological evaluations done on each alternative developed for plan revision. Also, the acres that each alternative creates each decade and the acres reaching mature condition provide the information needed to evaluate the flow of forest products over time as well as provide information to evaluate forest health.

Across all vegetation types the overall forest age shifts to older age classes for all alternatives.

Within individual vegetation types, there are only two alternatives where 60 plus age class acreage was less Forest wide after the fifth decade than it was after the first decade. These occurred in the model outcomes for shortleaf pine-oak forest and woodland in the proposed action alternative (C) and the enhanced forest health alternative (E). This also occurred for dry upland hardwood forest in the enhanced forest health alternative (E).

At the district level, there were three districts and three alternatives where age classes over 60 years contained less acreage than was over 60 after the first decade. Additional summary data by district are included in the Timber Resource Program, Suitability, and Sustainability Analysis Report (TRPSSAR).

The regeneration harvest acres for the overall forest would result in 0 to 10 age class acres of approximately 1 percent for the custodial alternative (A), 2 percent for the no-action alternative (B), 3 percent for the proposed action alternative (C) and the accelerated restoration alternative (D), and 5 percent for the enhanced forest health alternative (E). This results in effective rotation ages of 1000 years,

500 years, 333 years, 333 years and 200 years respectively. These ultimate stand ages are not reasonable for many Mississippi forest types.

Table B 54. National Forests in Mississippi custodial alternative A - age class outcome

Age Class System	End of Decade 1			End of Decade 5		
	0-10	11-59	60 +	0-10	11-59	60 +
Upland Loblolly Pine Forest	0	163,815	135,502	0	17,530	274,983
Mesic Loblolly Pine-Hardwood Forest	0	53,188	90,909	0	4,660	138,923
Shortleaf Pine-Oak Forest and Woodland	0	10,178	48,960	0	4,566	54,573
Upland Longleaf Pine Forest	847	85,253	152,776	6,019	25,537	218,271
Slash	0	72,259	41,972	0	1,489	108,818
Flatwoods	0	6,673	10,113	0	368	15,749
Dry Upland Hardwood Forest	0	10,382	95,503	0	655	105,230
Mesic Slope Forest	0	1,750	17,652	0	197	19,204
Floodplain Forest	0	24,278	131,341	0	1,308	154,313
National Forests in Mississippi Totals	847	427,776	724,728	6,019	56,310	1,090,064

Table B 55. National Forests in Mississippi no-action alternative B - age class outcome

Age Class System	End of Decade 1			End of Decade 5		
	0-10	11-59	60 +	0-10	11-59	60 +
Upland Loblolly Pine Forest	1,094	163,511	126,436	119	20,308	217,305
Mesic Loblolly Pine-Hardwood Forest	0	53,188	90,280	5	4,677	135,399
Shortleaf Pine-Oak Forest and Woodland	2,346	10,178	48,294	4,070	16,456	49,457
Upland Longleaf Pine Forest	8,632	85,252	152,775	15,554	62,945	218,270
Slash	0	70,054	40,691	0	1,489	92,968
Flatwoods	0	6,704	10,155	0	377	16,482
Dry Upland Hardwood Forest	2,295	10,375	94,514	2,754	10,010	102,484
Mesic Slope Forest	885	1,750	17,613	1,004	3,374	18,960
Floodplain Forest	921	24,278	130,921	1,688	6,405	150,303
National Forests in Mississippi Totals	16,173	425,290	711,679	25,194	126,041	1,001,628

Table B 56. Proposed action alternative C - age class outcome

Age Class System	End of Decade 1			End of Decade 5		
	0-10	11-59	60 +	0-10	11-59	60 +
Upland Loblolly Pine Forest	506	163,053	121,965	626	19,784	200,880
Mesic Loblolly Pine-Hardwood Forest	29	53,188	89,765	2,336	7,067	125,707
Shortleaf Pine-Oak Forest and Woodland	4,114	10,178	47,523	4,254	21,165	46,731
Upland Longleaf Pine Forest	13,125	85,252	152,775	17,397	84,221	216,547
Slash	0	70,485	39,052	703	1,489	81,767
Flatwoods	0	6,262	9,487	0	278	12,032
Dry Upland Hardwood Forest	3,703	10,375	93,941	4,287	16,371	96,918
Mesic Slope Forest	1,091	1,750	17,589	1,146	5,071	18,817
Floodplain Forest	2,662	24,278	129,602	5,176	12,377	145,162
National Forests in Mississippi Totals	25,230	424,821	701,699	35,925	167,823	944,561

Table B 57. Accelerated restoration alternative D - age class outcome

Age Class System	End of Decade 1			End of Decade 5		
	0-10	11-59	60 +	0-10	11-59	60 +
Upland Loblolly Pine Forest	0	156,759	113,083	0	16,539	147,540
Mesic Loblolly Pine-Hardwood Forest	0	53,188	87,804	0	4,660	126,222
Shortleaf Pine-Oak Forest and Woodland	9,281	10,178	48,589	4,564	33,309	52,892
Upland Longleaf Pine Forest	23,256	85,252	152,775	19,360	114,067	218,270
Slash	0	69,619	36,006	613	1,489	78,770
Flatwoods	0	6,385	9,679	0	322	14,289
Dry Upland Hardwood Forest	5,606	10,375	95,405	4,823	22,665	100,149
Mesic Slope Forest	2,405	1,750	17,590	1,515	8,128	18,838
Floodplain Forest	3,153	24,278	129,850	3,349	12,212	146,028
National Forests in Mississippi Totals	43,701	417,784	690,781	34,224	213,391	902,998

Table B 58. Enhanced forest health alternative E - age class outcome

Age Class System	End of Decade 1			End of Decade 5		
	0-10	11-59	60 +	0-10	11-59	60 +
Upland Loblolly Pine Forest	0	157,672	119,209	0	16,766	172,278
Mesic Loblolly Pine-Hardwood Forest	0	53,188	88,995	5,032	4,661	122,921
Shortleaf Pine-Oak Forest and Woodland	10,279	10,178	46,159	9,281	43,945	34,784
Upland Longleaf Pine Forest	13,678	85,252	152,775	29,510	92,601	203,431
Slash	0	71,189	39,358	703	1,489	85,222
Flatwoods	0	6,605	10,155	0	325	15,225
Dry Upland Hardwood Forest	9,469	10,375	93,342	6,590	26,375	91,072
Mesic Slope Forest	1,402	1,750	17,652	1,620	6,335	18,785
Floodplain Forest	2,942	24,278	129,861	4,458	12,798	145,345
National Forests in Mississippi Totals	37,770	420,487	697,506	57,194	205,295	889,063

B.2.8 Site Type Definitions

Within this document and the spreadsheet model a key grouping classification of vegetation is the site type on which the vegetation occurs. The site type is used as an indicator of appropriate vegetation based on the desired conditions for ecological systems. Site types are based on soils and landform characteristics. Soils were grouped by site type according to the crosswalk in Table B 59.

Table B 59. Site type – soil type crosswalk

Site Type	Soil Map Unit Name	Administrative Unit
Alluvial	Annemaine loam, 0-2 percent slopes, occasionally flooded	Chickasawhay / De Soto
Alluvial	Ariel Silt Loam, occasionally flooded	Homochitto
Alluvial	Belden and Leeper silty clay loams	Holly Springs NF / Tombigbee NF
Alluvial	Bibb fine sandy loam frequently flooded	Bienville
Alluvial	Bibb, Trebloc and Leaf soils, 0-2 percent slopes, frequently flooded	Chickasawhay / De Soto
Alluvial	Bigbee loamy sand, 0-2 percent slopes, occasionally flooded	Chickasawhay / De Soto
Alluvial	Bruno Sandy Loam, frequently flooded	Homochitto
Alluvial	Cahaba, Latonia and Bassfield soils, 0-2 percent slopes, occasionally flooded	Chickasawhay / De Soto
Alluvial	Cascilla and Jena soils	Holly Springs NF / Tombigbee NF
Alluvial	Chenneby and Mathiston silt loams	Holly Springs NF / Tombigbee NF
Alluvial	Collins Silt Loam, occasionally flooded	Homochitto
Alluvial	Dorovan and Pamlico soils, 0-2 percent slopes, frequently flooded	Chickasawhay / De Soto
Alluvial	Falaya Silt Loam, occasionally flooded	Homochitto
Alluvial	Gillsburg and Mantachie soils	Holly Springs NF / Tombigbee NF
Alluvial	Gillsburg Silt Loam, occasionally flooded	Homochitto
Alluvial	Guyton loam, occasionally flooded	Bienville
Alluvial	Harleston fine sandy loam, 0-2 percent slopes, occasionally flooded	Chickasawhay / De Soto
Alluvial	Houlka silty clay loam, occasionally flooded	Bienville
Alluvial	Iuka sandy loam, 0-2 percent slopes, occasionally flooded	Chickasawhay / De Soto
Alluvial	Jena fine sandy loam, occasionally flooded	Bienville
Alluvial	Kirkville fine sandy loam, occasionally flooded	Bienville
Alluvial	Leeper clay loam, occasionally flooded	Bienville
Alluvial	Lenoir silt loam, 0-2 percent slopes, frequently flooded	Chickasawhay / De Soto
Alluvial	Mantachie sandy loam 0-2 percent slopes, occasionally flooded	Chickasawhay / De Soto
Alluvial	Mantachie silt loam, occasionally flooded	Bienville
Alluvial	Marietta fine sandy loam	Holly Springs NF / Tombigbee NF
Alluvial	Marietta silt loam, occasionally flooded	Bienville
Alluvial	Nugent loamy sand, 0-2 percent slopes, occasionally flooded	Chickasawhay / De Soto
Alluvial	Oaklimeter and Collins silt loams	Holly Springs NF / Tombigbee NF
Alluvial	Ochlockonee and Jena sandy loams, 0-2 percent slopes, occasionally flooded	Chickasawhay / De Soto
Alluvial	Ochlockonee-Kirkville complex	Holly Springs NF / Tombigbee NF
Alluvial	Quitman fine sandy loam, occasionally flooded	Bienville
Alluvial	Riverwash	Homochitto

Site Type	Soil Map Unit Name	Administrative Unit
Alluvial	Stough fine sandy loam, 0-2 percent slopes, occasionally flooded	Chickasawhay / De Soto
Alluvial	Trebloc Silt Loam, frequently flooded	Homochitto
Alluvial	Typic Fluvaquents	Holly Springs NF / Tombigbee NF
Alluvial	Urbo and Una soils, frequently flooded	Bienville
Alluvial	Urbo silty clay loam, occasionally flooded	Bienville
Black Belt Prairie Soils	Demopolis silty clay loam	Holly Springs NF / Tombigbee NF
Black Belt Prairie Soils	Gullied land-Demopolis complex	Holly Springs NF / Tombigbee NF
Dry	Atwood silt loam	Holly Springs NF / Tombigbee NF
Dry	Benndale and Heidel soils, 8-15 percent slopes	Chickasawhay / De Soto
Dry	Cahaba fine sandy loam	Holly Springs NF / Tombigbee NF/ Bienville
Dry	Cahaba sandy loam	Homochitto
Dry	Gullied land-Smithdale complex	Holly Springs NF / Tombigbee NF
Dry	Heidel fine sandy loam	Bienville
Dry	Heidel sandy loam, 15-30 percent slopes	Chickasawhay / De Soto
Dry	Lexington silt loam, 8-17% slopes	Holly Springs NF / Tombigbee NF
Dry	Lucy and Wadley soils	Holly Springs NF / Tombigbee NF
Dry	Lucy loamy sand	Homochitto
Dry	Maben fine sandy loam and Sweatman silt lo	Holly Springs NF / Tombigbee NF
Dry	Maben loam and Sweatman fine sandy loam	Holly Springs NF / Tombigbee NF
Dry	Maben silt loam and Sweatman silt loam	Holly Springs NF / Tombigbee NF
Dry	McLaurin and Benndale fine sandy loams, 0-8 percent slopes	Chickasawhay / De Soto
Dry	Ruston and Lucedale soils, 0-8 percent slopes	Chickasawhay / De Soto
Dry	Shubuta fine sandy loam, 8-12 percent slopes	Chickasawhay / De Soto
Dry	Smithdale and Ruston soils	Holly Springs NF / Tombigbee NF
Dry	Smithdale fine sandy loam	Bienville /Holly Springs NF / Tombigbee NF
Dry	Smithdale fine sandy loam, 15-35 percent slopes, eroded	Chickasawhay / De Soto
Dry	Smithdale fine sandy loam, 8-15 percent slopes, eroded	Chickasawhay / De Soto
Dry	Smithdale-Rock outcrop sandstone complex	Bienville
Dry	Sweatman fine sandy loam	Bienville
Dry - Bienville and all compartments on Homochitto except: 202, 204-229, 231-233, 241-244	Ruston Fine Sandy Loam	Bienville /Homochitto
Dry - All compartments on Homochitto except: 202, 204-229, 231-233, 241-244	Saffell Gravelly Fine Sandy Loam	Homochitto

Site Type	Soil Map Unit Name	Administrative Unit
Dry - Holly Springs, Tombigbee, and all compartments on Homochitto except: 202, 204-229, 231-233, 241-244	Smithdale Sandy Loam	Homochitto/Holly Springs NF / Tombigbee NF
Dry to Mesic	Boswell fine sandy loam	Bienville
Dry to Mesic	Freest fine sandy loam	Bienville
Dry to Mesic	Freest fine sandy loam, 0-8 percent slopes	Chickasawhay / De Soto
Dry to Mesic	Freest-Susquehanna Complex, 5-12 percent slopes	Chickasawhay / De Soto
Dry to Mesic	Kolin silt loam, eroded	Homochitto
Dry to Mesic	Loring silt loam, 8-17 % slopes	Holly Springs NF / Tombigbee NF
Dry to Mesic	Lorman Silt Loam	Homochitto
Dry to Mesic	Lorman silt loam, 15-40 percent slopes	Chickasawhay / De Soto
Mesic	Oktibbeha silty clay loam	Bienville
Dry to Mesic	Ora fine sandy loam	Bienville
Dry to Mesic	Ora sandy loam	Holly Springs NF / Tombigbee NF
Dry to Mesic	Petal fine sandy loam, 8-20 percent slopes	Chickasawhay / De Soto
Dry to Mesic	Poarch, Malbis and Saucier soils, 0-8 percent slopes	Chickasawhay / De Soto
Dry to Mesic	Prentiss fine sandy loam, 0-5 percent slopes	Chick / DeSoto /HS NF / Tombigbee NF
Dry to Mesic	Providence silt loam, 8-15 % slopes	Holly Springs NF / Tombigbee NF
Dry to Mesic	Savannah fine sandy loam	Bienville /Holly Springs NF / Tombigbee NF
Dry to Mesic	Savannah fine sandy loam, 0-5 percent slopes	Chickasawhay / De Soto
Dry-mesic	Providence silt loam, 0-8% slopes	Homochitto
Dry-mesic	Providence silt loam, 0-8% slopes	Holly Springs NF / Tombigbee NF
Mesic	Bude Silt Loam	Homochitto
Mesic	Escambia and Basin soils, 0-3 percent slopes	Chickasawhay / De Soto
Mesic	Falkner silt loam	Bienville
Mesic	Falkner silt loam, 0-3 percent slopes	Chickasawhay / De Soto
Mesic	Ichusa silty clay loam	Bienville
Mesic	Kipling loam	Holly Springs NF / Tombigbee NF
Mesic	Kipling silt loam	Holly Springs NF / Tombigbee NF
Mesic	Lenoir silt loam, 0-2 percent slopes	Chickasawhay / De Soto
Mesic	Louin silty clay loam	Bienville
Mesic	Nahunta silt loam, 0-2 percent slopes	Chickasawhay / De Soto
Mesic	Stough fine sandy loam	Bienville
Mesic	Susquehanna fine sandy loam, 2-8 percent slopes	Chickasawhay / De Soto
Mesic	Susquehanna fine sandy loam, 8-15 percent slopes, eroded	Chickasawhay / De Soto
Mesic	Wilcox silt loam	Holly Springs NF / Tombigbee NF

Site Type	Soil Map Unit Name	Administrative Unit
Non-riverine Hydric Soils	Adaton silt loam	Bienville
Non-riverine Hydric Soils	Atmore, Plummer and Smithton soils, 0-2 percent slopes	Chickasawhay / De Soto
Prairie Soils	Maytag silty clay	Bienville
Prairie Soils	Okolona silty clay	Bienville
Upland Loess	Calloway-Grenada complex	Holly Springs NF / Tombigbee NF
Upland Loess	Gullied land - Loring Complex	Holly Springs NF / Tombigbee NF
Upland Loess	Gullied land-Providence complex	Holly Springs NF / Tombigbee NF
Upland Loess	Lexington silt loam, 2-8 % sloeps	Holly Springs NF / Tombigbee NF
Upland Loess	Lexington Silt Loam, Eroded	Homochitto
Upland Loess	Loring Silt Loam, 0-8% slopes	Homochitto
Upland Loess	Loring silt loam, 2-8 % slopes	Holly Springs NF / Tombigbee NF
Upland Loess	Memphis Silt Loam, Eroded	Homochitto
Upland Loess - Compartments: 202, 204-229, 231-233, 241-244	Ruston Fine Sandy Loam, combined with loess because the occurrence is not conducive to management separately	Homochitto
Upland Loess - Compartments: 202, 204-229, 231-233, 241-244	Saffell Gravelly Fine Sandy Loam, combined with loess because the occurrence is not conducive to management separately	Homochitto
Upland Loess - Compartments: 202, 204-229, 231-233, 241-244	Smithdale Sandy Loam, combined with loess because the occurrence is not conducive to management separately	Homochitto
Xeric	Eustis and Lakeland loamy sands, 0-8 percent slopes	Chickasawhay / De Soto
Xeric	Eustis and Lakeland soils, 15-30 percent slopes	Chickasawhay / De Soto
Xeric	Eustis and Lakeland soils, 8-15 percent slopes	Chickasawhay / De Soto
Xeric	Lakeland sand	Bienville
Xeric	Wadley fine sand, 0-8 percent slopes	Chickasawhay / De Soto

B.2.9 Emphasis Area Data Protocols for Vegetation Model

For the purpose of modeling, areas were grouped for which similar prescriptions could be implemented to meet management emphases. This section provides information on the composition of these management emphasis areas by district. This information provided the basis for querying the FSVeg database to summarize acres by emphasis area for modeling also for summarizing acres by suitability category.

Table B 60. Bienville data protocols for vegetation model

Emphasis Area	Components	Land Class Code	Timber Suitability
Grow Only	Research Natural Area	330, 430	Not suitable for timber production.
Custodial Management	Recreation sites	850	
	Scenic area	310	
	Inadequate markets	822	
	Inaccessible right-of-way needed	823	
	Physical barriers	826	
	Road cost exceeds values	827	
	Threatened and endangered plants where ev_code not = 98 or 99	832	
Non-Forest Land	Administrative Sites	860	
	Wildlife openings	250	
	Special uses	240	
	Road and railroad right-of-way	230	
	Utility right-of-way	220	
	Non-forest land	200	
	River	140	
	Reservoir	120	
	Natural lake	110	
	Water area	100	
	Un-productive with ev_code =98 or 99	900	
	Threatened and endangered plants where ev_code = 98 or 99	832	
Red-cockaded Woodpecker Habitat Management Area Non-Old Growth Emphasis	Stands in habitat management area with old growth code not between 0 and 11 excluding grow only, custodial management and non-forest land	Not equal grow only, custodial management or non-forest land land class codes above	Tentatively suitable for timber production.
Red-cockaded Woodpecker Habitat Management Area Old Growth Emphasis	Stands in habitat management area with old growth between 0 and 11 excluding grow only, custodial management and non-forest land		Tentatively suitable for timber production, but usually determined to be not appropriate for timber production.
General Forest Area Non-Old Growth Emphasis	Non-habitat management area stands with old growth not between 0 and 11 excluding grow only, custodial management and non-forest land		Tentatively suitable for timber production.
General Forest Area Old Growth Emphasis	Non-habitat management area stands with old growth between 0 and 11 excluding grow only, custodial management and non-forest land		Tentatively suitable for timber production, but usually determined to be not appropriate for timber production.

Table B 61. DeSoto data protocols for vegetation model

Emphasis Area	Components	Land Class Code	Timber Suitability
Grow Only	Research Natural Area	330, 430	Not suitable for timber production.
Custodial Management	Wild and Scenic River	360, 460	
	Restocking not assured	710	
	Irreversible damage	720	
	Recreation sites with ev_code not equal 0	850	
	Un-developed Recreation Sites	851	
	Administrative Sites	860	
	Un-developed Administrative Sites	861	
	Nursery	870	
	Seed Orchard with ev_code not equal 0	871	
	MIN Level Steep Slopes	821	
	Inaccessible right-of-way needed	823	
	MIN Level Sensitive Soils	824	
	MIN Level Low Level Management	825	
	Physical barriers	826	
	Road cost exceeds values	827	
	Threatened and endangered plants where ev_code not = 98 or 99	832	
	Other Rare/Endangered Species	846	
	Military Use	890	
	Unproductive Land	900	
Non-forest Land	Seed Orchard with ev_code = 0	871	
	Recreation Sites with ev_code = 0	850	
	Military Use	290	
	Pitcher Plant Bogs	251	
	Wildlife openings	250	
	Special uses	240	
	Road and railroad right-of-way	230	
	Utility ROW	220	
	Cemetary	210	
	Non-forest land	200	
	River	140	
	Reservoir	120	
	Natural lake	110	
	Water area	100	
Experimental Forest Non-Old Growth Emphasis	Harrison Experimental Forest with old growth code not between 0 and 11.	810	
Experimental Forest Old Growth Emphasis	Harrison Experimental Forest with old growth code between 0 and 11.	810	

Emphasis Area	Components	Land Class Code	Timber Suitability
Red-cockaded Woodpecker Habitat Management Area Non-Old Growth Emphasis	Stands in habitat management area with old growth code not between 0 and 11 excluding grow only, custodial management and non-forest land	Not equal grow only, custodial management, non-forest land or experimental forest land class codes above	Tentatively suitable for timber production.
Red-cockaded Woodpecker Habitat Management Area Old Growth Emphasis	Stands in habitat management areas with old growth between 0 and 11 excluding grow only, custodial management and non-forest land		Tentatively suitable for timber production, but usually determined to be not appropriate for timber production.
General Forest Area Non-Old Growth Emphasis	Non- habitat management areas stands with old growth not between 0 and 11 excluding grow only, custodial management and non-forest land		Tentatively suitable for timber production.
General Forest Area Old Growth Emphasis	Non- habitat management areas stands with old growth between 0 and 11 excluding grow only, custodial management and non-forest land		Tentatively suitable for timber production, but usually determined to be not appropriate for timber production.

Table B 62. Homochitto data protocols for vegetation model

Emphasis Area	Components	Land Class Code	Timber Suitability
Grow Only	Research Natural Area	330	Not suitable for timber production.
Custodial Management	Restocking not assured where ev_code not = 98	710	
	Not Appropriate	800	
	Recreation sites with ev_code not equal 0	850	
	Un-developed Recreation Sites	851	
	Physical barriers	826	
Non-Forest Land	Administrative Sites	860	
	Undeveloped Administrative Sites	861	
	Wildlife openings	250	
	Special uses	240	
	Road and railroad right-of-way	230	
	Utility right-of-way	220	
	Non-forest land	200	
	River	140	
	Reservoir	120	
	Natural lake	110	
	Water area	100	
	Restocking not assured where ev_code not = 98	710	

Emphasis Area	Components	Land Class Code	Timber Suitability
Red-cockaded Woodpecker Habitat Management Area Non-Old Growth Emphasis	Stands in habitat management areas with old growth code not between 0 and 11 excluding grow only, custodial management and non-forest land	Not equal Grow Only, Custodial Management or Non-Forest Land land class codes above	Tentatively suitable for timber production.
Red-cockaded Woodpecker Habitat Management Area Old Growth Emphasis	Stands in habitat management areas with old growth between 0 and 11 excluding grow only, custodial management and non-forest land		Tentatively suitable for timber production, but usually determined to be not appropriate for timber production.
General Forest Area Non-Old Growth Emphasis	Non- habitat management areas stands with old growth not between 0 and 11 excluding grow only, custodial management and non-forest land		Tentatively suitable for timber production.
General Forest Area Old Growth Emphasis	Non- habitat management areas stands with old growth between 0 and 11 excluding grow only, custodial management and non-forest land		Tentatively suitable for timber production, but usually determined to be not appropriate for timber production.

Table B 63. Chickasawhay data protocols for vegetation model

Emphasis Area	Components	Land Class Code	Timber Suitability
Grow Only	Research Natural Area and Botanical Areas	430	Not suitable for timber production
Custodial Management	Not Appropriate	800	
	Sensitive Soils	824	
	Recreation sites with ev_code not equal 0	850	
	Un-developed Recreation Sites	851	
	Physical barriers	826	
	Administrative Sites	860	
Non-Forest Land	Wildlife openings	250	
	Special uses	240	
	Road and railroad right-of-way	230	
	Utility right-of-way	220	
	Public Park, Cemetery	210	
	Non-forest land	200	
	Reservoir	120	
	Natural lake	110	
	Threatened and Endangered plants where ev_code =98	832	

Emphasis Area	Components	Land Class Code	Timber Suitability
Red-cockaded Woodpecker Habitat Management Area Non-Old Growth Emphasis	Stands in habitat management areas with old growth code not between 0 and 11 excluding grow only, custodial management and non-forest land	Not equal Grow Only, Custodial Management or Non-Forest Land land class codes above	Tentatively suitable for timber production.
Red-cockaded Woodpecker Habitat Management Area A Old Growth Emphasis	Stands in habitat management areas with old growth between 0 and 11 excluding grow only, custodial management and non-forest land		Tentatively suitable for timber production, but usually determined to be not appropriate for timber production.

Table B 64. Delta data protocols for vegetation model

Emphasis Area	Components	Land Class Code	Timber Suitability
Grow Only	Research Natural Area and Botanical Areas	330, 430	Not suitable for timber production
	Historical Areas	320	
Custodial Management	Slough Buffers	820, 828	
	Recreation sites with ev_code not equal 0	850	
Non-Forest Land	Administrative Sites	860	
	Undeveloped Recreation Sites with ev_code not = 0	851	
	Wildlife openings	250	
	Special uses	240	
	Road and railroad right-of-way	230	
	Utility right-of-way	220	
	Non-forest land	200	
General Forest Area Non-Old Growth Emphasis	Standard forest land, old growth code not between 0-11	500	Tentatively suitable for timber production.
	Wildlife emphasis, old growth code not between 0 -11	650	
	Key Area for Wildlife, old growth code not between 0-11	510	
	Contains threatened and endangered plants, old growth code not between 0 -11	512	
General Forest Area Old Growth Emphasis	Non- habitat management areas stands with Old Growth between 0 and 11 excluding Grow Only, Custodial Management and Non-Forest Land		Tentatively suitable for timber production, but usually determined to be not appropriate for timber production.
	Standard forest land, old growth code between 0 -11	500	
	Late Serial, old growth code between 0 - 11	600	
	Wildlife emphasis, old growth code between 0 -11	650	
	Key Area for Wildlife, old growth code between 0 -11	510	
	Contains threatened and endangered plants, old growth code between 0 -11	512	

Table B 65. Holly Springs data protocols for vegetation model

Emphasis Area	Components	Land Class Code	Timber Suitability
Grow Only	Research Natural Area and Botanical Areas	430	Not suitable for timber production
Custodial Management	Recreation sites with ev_code not equal 0	850	
	Restocking not assured	710	
	Irreversible damage	720	
	Response info lacking	740	
	MIN Level Sensitive Soils	824	
	MIN Level Low Level Management	825	
	Physical barriers	826	
	Administrative Sites with ev_code not = 0	860	
	Un-developed Administrative Sites with ev_code not = 0	861	
	Unproductive Land with ev_code > 0 and < 98	900	
Non-Forest Land	Administrative Sites with ev_code = 0	860	
	Wildlife openings	250	
	Special uses	240	
	Road and railroad right-of-way	230	
	Utility right-of-way	220	
	Non-forest land	200	
	Stream	150	
	Reservoir	120	
	Natural lake	110	
	Water area	100	
	Unproductive with ev_code 0, 98 or 99	900	
Experiment-al Forest Non-Old Growth Emphasis	Tallahatchie Experimental Forest with old growth code not between 0 and 11.	810	
Experiment-al Forest Old Growth Emphasis	Tallahatchie Experimental Forest with old growth code between 0 and 11.	810	
General Forest Area Non-Old Growth Emphasis	Lands with old growth code not between 0 -11 excluding lands in grow only, custodial, experimental forest or non-forest land	Land classes not included in grow only, custodial, experimental forest or non-forest land	Tentatively suitable for timber production.
General Forest Area Old Growth Emphasis	Lands with old growth code between 0 -11 excluding lands in grow only, custodial, experimental forest or non-forest land		Tentatively suitable for timber production, but usually determined to be not appropriate for timber production.

Table B 66. Tombigbee data protocols for vegetation model

Emphasis Area	Components	Land Class Code	Timber Suitability
Grow Only	Research Natural Area and Botanical Areas	330, 430	Not suitable for timber production
	Geological / Archeological Areas	340	
Custodial Management	Recreation sites with ev_code not equal 0	850	
	Not Appropriate MIN Level	820	
	Not Appropriate MIN Level Steep Slopes	821	
	Unproductive Land with ev_code > 0 and < 98	900	
Non-Forest Land	Administrative Sites with ev_code = 0	860	
	Wildlife openings	250	
	Special uses	240	
	Road and railroad right-of-way	230	
	Utility right-of-way	220	
	Public Park, cemetery	210	
	Non-forest land	200	
	Reservoir	120	
	Water area	100	
	Unproductive with ev_code 0, 98 or 99	900	
General Forest Area Non-Old Growth Emphasis	Lands with old growth code not between 0 -11 excluding lands in grow only, custodial, or non-forest land	Land classes not included in grow only, custodial, or non-forest land	Tentatively suitable for timber production.
General Forest Area Old Growth Emphasis	Lands with old growth code between 0 -11 excluding lands in grow only, custodial, or non-forest land	Land classes not included in grow only, custodial, or non-forest land	Tentatively suitable for timber production, but usually determined to be not appropriate for timber production.

B.3 Social and Economic

B.3.1 Conditions and Trends

The National Forests in Mississippi (Forests) consist of 1.2 million acres of public lands located in six forests across the state. The Bienville, Delta, De Soto, Holly Springs, Homochitto, and Tombigbee National Forests are headquartered in Jackson, Mississippi. The following socioeconomic overview of the National Forests in Mississippi will discuss the socioeconomic trends and changes in the thirty-five Mississippi counties containing National Forest System lands. The analysis area counties and composition are presented in Table B 67.

This overview provides information on the physical and organizational characteristics of the National Forests in Mississippi and identifies key forest resources and uses. In order to place the National Forests in Mississippi in its context, brief discussions are provided of the contrasts and comparisons to state characteristics.

Table B 67. National Forest System land base by Forest

Forest	Sq. Miles	Total Acres	NF Acres	% of County
Bienville NF	2504.0	1,602,560	178,542	11.1
De Soto NF	5608.3	3,589,312	380,202	10.6
Delta NF	434.8	278,272	60,215	21.6
Holly Springs	3168.7	2,027,968	155,653	7.7
Homochitto NF	4366.9	2,794,816	191,597	6.9
Tombigbee NF	2496.6	1,597,284	66,874	4.2
NF Counties	20811.0	13,319,040	1,183,436	8.9
Mississippi	48434.0	30997760	1183436	3.8

Source: USDA Forest Service

Acres-by-county information is included in the Social Economic Overview document contained in the forest plan set of documents.

Characteristics of an area, such as the growth of population and its various racial and ethnic components, can be used to determine how dynamic and subject to change an area may be.

A static area will imply few possible factors affecting change, but a dynamic growing population may produce conflicting concerns for land managers to consider. Certain areas of the national forests and surrounding lands, which are seen to be attractive to urban dwellers for recreation and second or retirement home residence, may cause conflict with traditional residents of the area. In the following subheading we will discuss demographic characteristics that may assist land managers in identifying issues for current and future projects.

Demography

Information about population characteristics helps describe the general nature of a community or area. An analysis of population trends can help determine if changes are occurring for specific groups defined by age, gender, education level, or ethnicity, thereby influencing the nature of social and economic relationships in the community.

Mississippi's population, presented in Table B 68, increased from 2,520,638 in the 1980 Census to 2,951,996 in the 2009 Census data. This translates into a 17 percent increase in population between 1980 and 2009. However, between 1990 and 2000, the population increased by 10.5 percent, much of this growth in the extreme north and southeast areas of Mississippi.

Table B 68. Population change for Mississippi

Population Change for Mississippi 1980-2009			
Year	**Total Population**	**Population Change**	**Percent Change**
1980	2,520,638	-	-
1990	2,573,216	52,578	2.1%
2000	2,844,658	271,442	10.5%
2009	2,951,996	107,338	3.77%

Source: U.S. Census Bureau from USDA NRIS HD Model

Population trends for National Forests in Mississippi counties are similar for the entire state. Table B 69 presents the most recent information available on population changes for the counties in the analysis area.

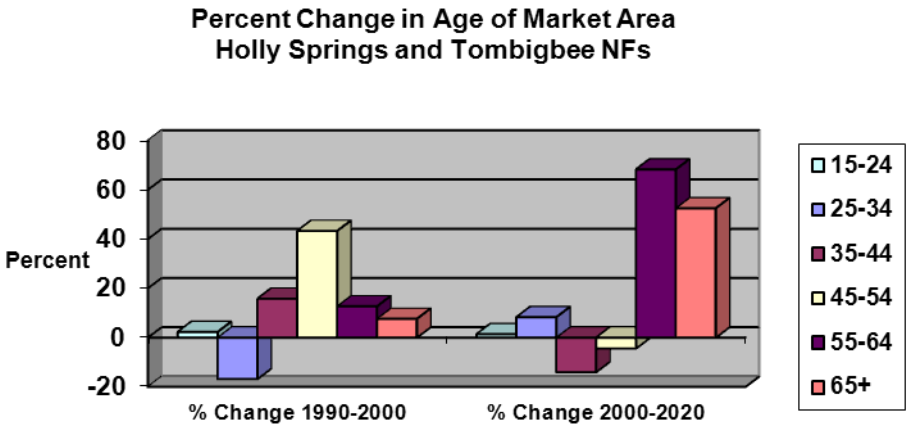
The populations of the Bienville National Forest, Delta National Forest, and Homochitto National Forest declined from 1980 to 1990. The populations of all forests showed growth during the 1990-2000 decade. The Holly Springs National Forest population experienced the most growth during that period due to the area becoming a popular family residential and retirement destination. The growth or decline of a population has a greater relative impact in smaller, rural areas. The smaller and less dense population base found in rural areas makes delivery of basic services more difficult. In urban areas, the logistics and mechanisms for providing public services produce economies of scale impossible for rural areas to duplicate.

Table B 69. Population change for the National Forests in Mississippi

National Forest	1980	1990	2000	2009	% Change 1980-1990	% Change 1990-2000	% Change 2000-2009
Bienville	76,842	76,340	84,592	85,675	-0.7%	10.8%	1.28%
Delta	62,104	56,855	58,498	Missing	-8.5%	2.9%	Missing
De Soto	501,244	517,692	586,623	607,798	3.3%	13.3%	3.61%
Holly Springs	143,016	146,111	167,728	151,553	2.2%	14.8%	-9.6%
Homochitto	135,491	133,262	138,362	135079	-1.6%	3.8%	-2.4%
Tombigbee	103,259	107,201	118,986	120801	3.8%	11.0%	1.5%
Total NF in Mississippi	1,021,956	1,037,461	1,154,789	Missing	2.1%	10.5%	Missing

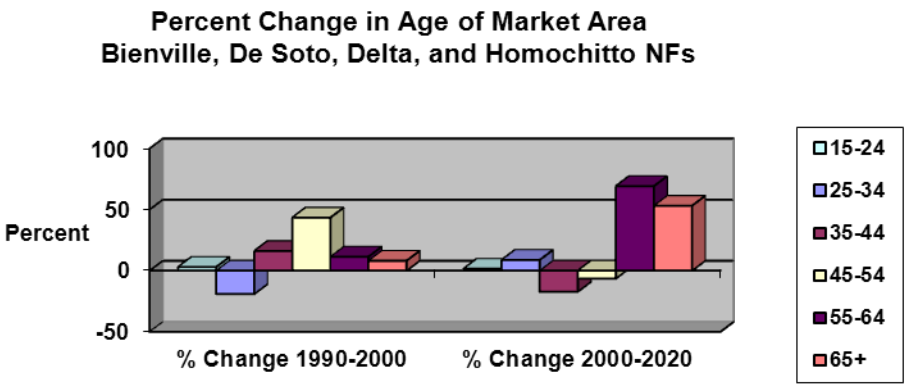
Source: U.S. Census Bureau from USDA NRIS HD Model

In the future, the population of the United States is expected to age. The median age in the United States has risen steadily since the 1800s in part due to increases in medical technology, hygiene, and rising real income. In 1990 the median age was 32.8; by 2020 it is expected to increase to 38 years of age. As the population ages, their recreation preferences will change. The charts below show percent increases and projections in each of the age strata for the thirty year period between 1990 and 2020. 45-54 is the high growth strata for the 1990s. The age groups 65 plus, 55-64, and 25-34 are the projected highest growth strata in the National Forests in Mississippi analysis area for the next 20 years. Given the ageing of the market area, it is likely that activities that older people like to do will increase in demand.



Source: US Census

Figure B 2. Age of market area for Holly Springs and Tombigbee National Forests



Source: US Census

Figure B 3. Age of market area for Bienville, De Soto, Delta and Homochitto National Forests

Table B 70 shows the population of Mississippi by race in 1980, 1990, 2000, and 2010. Over half of the population in the counties that contain National Forest System lands is White (65.3 percent), as well as the State as a whole which is 59.1 percent White in 2010. Holly Springs and De Soto NF have the highest composition of White residents, 67.81 and 69.45 percent respectively.

National visitor use monitoring (NVUM) data reports that 99.4 percent of the visitors to the National Forests in Mississippi are White. A recent values, attitudes, and beliefs survey of National Forests in Mississippi area residents drew responses from White, Black, and Hispanic residents.

Table B 70. Racial composition of forest counties

Racial Composition of National Forests in Mississippi Counties					
Area	**Race**	**1980**	**1990**	**2000**	**2010**
Bienville NF	Hispanic	0.92%	0.29%	2.4%	4.4%
	Native American	0.74%	1.02%	1.09%	1.45%
	Asian	0.06%	0.02%	0.16%	.16%
	Black	33.4%	35.3%	36.6%	35.75%
	White	65.6%	63.4%	60.5%	59%
Delta NF	Hispanic	1.17%	0.48%	1.04%	.8%
	Native American	0.09%	0.15%	0.22%	.1%
	Asian	0.55%	0.53%	0.57%	.2%
	Black	41.7%	42.8%	46.8%	71%
	White	57.4%	56.3%	51.3%	27.9%
De Soto NF	Hispanic	1.3%	1.04%	1.95%	4.25%
	Native American	0.20%	0.30%	0.36%	.42%
	Asian	0.57%	1.14%	1.4%	1.53%
	Black	20.7%	21.9%	22.7%	25%
	White	78.1%	76.4%	73.6%	69.45%

Racial Composition of National Forests in Mississippi Counties					
Area	**Race**	**1980**	**1990**	**2000**	**2010**
Holly Springs NF	Hispanic	0.75%	0.49%	1.4%	3.07%
	Native American	0.04%	0.11%	0.20%	.24%
	Asian	0.18%	0.51%	0.50%	.77%
	Black	28.7%	27.9%	27.5%	28.45%
	White	70.9%	71.3%	70.5%	67.81%
Homochitto NF	Hispanic	0.83%	0.24%	0.80%	2.56%
	Native American	0.03%	0.08%	0.13%	.21%
	Asian	0.08%	0.15%	0.18%	.25%
	Black	47.2%	47.5%	48%	47.62%
	White	52.6%	52.2%	50.6%	50.2%
Tombigbee NF	Hispanic	0.87%	0.53%	1.44%	2.33%
	Native American	0.19%	0.25%	0.29%	.32%
	Asian	0.33%	0.96%	1.01%	.29%
	Black	68%	66.7%	64.3%	32.76%
	White	31.9%	33%	35.6%	63.03%
TOTAL National Forests in Mississippi	Hispanic	1.08%	0.72%	1.6%	3.42%
	Native American	0.19%	0.29%	0.35%	.44%
	Asian	0.39%	0.79%	0.95%	.92%
	Black	28%	29%	29.8%	30%
	White	70.5%	69.5%	67%	65.3%
Mississippi	Hispanic	0.98%	0.57%	1.3%	2.7%
	Native American	0.24%	0.34%	0.41%	0.5%
	Asian	0.30%	0.49%	0.68%	0.9%
	Black	35%	35%	36%	37.0%
	White	64%	63%	61%	59.1%

Source: U.S. Census Bureau from USDA NRIS HD Model

The minority population increased from 29.4 percent to 32.6 percent between 1990 and 2000 within the forest boundaries and from 35.9 to 38.6 percent in Mississippi. The minority percentage within the forest boundaries increased again in 2010 to 34.78 percent. Similarly the minority population for the entire State increased to 41.1 percent in 2010. National Forests in Mississippi percentages of Native Americans, Asian and Pacific Islanders, and Hispanics range from under one-half percent to 3.42 percent. The Bienville National Forest has the highest percentage of Hispanics with an increase to 4.4 percent in 2010 from 0.29 percent in 1990. The Bienville National Forest also has the highest percentage of Native Americans, who make up 1.45 percent of the population. Hispanics have been the fastest growing segment of the population. Their percentage of the National Forests in Mississippi population has increased over 3 fold from 1980 to 2010. This increase has been slightly higher than the statewide increase for Hispanics over the same time period of a 2.76 fold increase.

US aggregated population density is about 80 persons per square mile (2000) in contrast to Mississippi which despite recent growth has a population density of 60 persons per square mile. Population density is dependent in part on the amount of land available for settlement and on transportations systems. The population density of the counties in Mississippi that contain National Forest System land is 119. This is caused in large part by the high population density of Harrison (284.6), Jackson (158.6), and Forrest (146.4) counties on the De Soto National Forest. Overall, the De Soto National Forest had 184.3 persons per square mile in 2000. Bienville National Forest had the lowest population density of any forest with 36.1 persons per square mile in 2000.

Most of the larger population centers in the analysis area are located along major interstate highway routes. Three interstate highways are in the analysis area. Interstate 55 (I-55) connects the major cities of northern and southern Mississippi, passing through Grenada, Jackson, Brookhaven, and McComb. Interstate 20 (I-20) connects the eastern and western parts of Mississippi, passing through Vicksburg, Jackson, and Meridian. Interstate 59 (I-59) connects the southeastern cities of Meridian, Hattiesburg, and Picayune.

In terms of regional neighbors to the National Forests in Mississippi, there are several major population concentrations within an hour drive of the National Forests in Mississippi including Tupelo, Jackson, Meridian, Hattiesburg, Gulfport, Biloxi, Pascagoula, and to the north, Memphis, Tennessee. The growing density in Memphis to the north of the analysis area, in Mobile, Alabama, to the east, and the coastal areas around Biloxi suggest that population density may increase if the trend in nearby regions continues to extend into the analysis area counties. This will have implications for land use and regulations.

Population projection is often times a hard task to accomplish with accuracy. The Environmental Protection Agency has made straight line interpolation projections to 2015 for every county in the United States. Table B 71 shows the population and percentage change for the National Forests in Mississippi counties. All of the National Forests in Mississippi will gain population in the 15 year timeframe. However, only the Delta and Homochitto National Forests will experience an increase in the percentage of growth during each 5 year increment. The rest of the National Forests in Mississippi are expected to experience growth similar to the state as a whole. According to the Environmental Protection Agency population projections, the National Forests in Mississippi area continue to be seen as a desirable place for people to live. The table below gives an estimate of changes between 2000 and 2015 for the forests and the state.

Table B 71. Population projections - percentage increase from 2000

	2000 to 2005	2005 to 2010	2010 to 2015	2000 to 2015
Bienville NF	3.68%	3.28%	2.94%	10.2%
Delta NF	2.01%	2.18%	2.31%	6.6%
De Soto NF	6.56%	5.24%	4.23%	16.9%
Holly Springs NF	5.53%	3.99%	3.13%	13.2%
Homochitto NF	1.69%	1.72%	1.76%	5.3%
Tombigbee NF	3.67%	2.47%	1.48%	7.8%
National Forests in Mississippi Counties	5.09%	4.08%	3.33%	13.0%
Mississippi	5.16%	4.23%	3.50%	13.5%

Per Capita Income

The contemporary community contrast of Mississippi is structured by demography and economy. When giving an overview of the economic characteristics of an area, indicators such as per capita income (Table B 72), unemployment rates, poverty rates, transfer payments, and household composition are used to measure economic progress/viability.

Per capita income is a relative measure of the wealth of an area. It constitutes the personal income from all sources divided by the population of that area. For the National Forests in Mississippi analysis area, the per capita income average was $9,375, $14,550 and $29,843 in 1990, 2000 and 2010, respectively.

Table B 72. Per capita income

Forest	2000 Per Capita Income	2000 Per Capita Income in 2010 $$	2010 Per Capita Income	Real Avg. Annual Change 2000-2010
Bienville NF	$13,912	$17,616.77	$26, 385	5%
Delta NF	$16,567	$20,978.79	$24,422	1.64%
De Soto NF	$14,265	$18,063.77	$32,182	7.82%
Holly Springs NF	$15,077	$19,092.01	$27,517	4.41%
Homochitto NF	$13,548	$17,155.83	$26,755	5.6%
Tombigbee NF	$14,664	$18,569.02	$26, 663	4.36%
National Forests in Mississippi Counties	$14,550	$18,424.67	$29,843	6.2%%
Mississippi	$15,853	$20,074.65	$30,900	5.39%

Source: U.S. Census Bureau from USDA NRIS HD Model
Real rates of increase were determined by inflating 2000 per capita income to 2010 with the Consumer Price Index Deflator.

The real average change in forest area income between 2000 and 2010 was 6.2 percent. This contrasts with that of the state's 5.39 percent per year average annual change between 2000 and 2010. The De Soto National Forest was the fastest growing forest for per capita income at a 7.82 percent rate per year on a real basis over the 2000 decade. All of the forests are progressing at rate comparable to the state average except the Delta National Forest, which is rising at a slower rate.

Income for the National Forests in Mississippi area grew at a similar pace to Mississippi's income on a real basis (inflation adjusted) during the 2000s. Basic financial well-being increased an equal rate in the National Forests in Mississippi analysis area and in Mississippi for the 2000s decade, with the exception of the Delta National Forest counties, which increased, but did so, on a lower scale.

Another indicator of relative economic prosperity is the percent of the workforce out of work. Unemployment rates change dramatically over time, depending in large part on the national economy. Some areas, however, have protracted unemployment problems because of educational attainment and lack of skills.

In 2001 the National Forests in Mississippi had slightly more unemployment, 6.3, than that of the State (5.5). However, in 2010 this was reversed with 10.3 percent unemployment within the Forest compared to

10.4 percent for the State. The Forest unemployment rate was calculated as a weighted average (unemployment rate and number of unemployed) of all counties in the area (Table B 73).

Table B 73. Unemployment rate 1995-2010

Forest	1995	2001	2010
Bienville NF	6.1	5.0	9.6%
Delta NF	9.5	7.0	12.9%
De Soto NF	6.1	4.8	9.4%
Holly Springs NF	9.1	5.8	11.4%
Homochitto NF	7.9	7.6	11.5%
Tombigbee NF	7.2	10.2	12.3%
National Forests in Mississippi Counties	6.8	6.3	10.3%
Mississippi	6.1	5.5	10.4%

Source: U.S. Bureau of Labor Statistics from USDA NRIS HD Model

During the period of 1995 to 2001 the unemployment rate for the National Forests in Mississippi analysis area was higher than the rate of Mississippi, however both decline and then increase from 1995 to 1998 and 1998 to 2001, respectively. The Forest and Statewide unemployment rates increased dramatically by 2010 to over 10 percent. The Tombigbee st, Homochitto, and Delta National Forests had unemployment rates that were higher than the forest average for 2001. These Forests as well as the Holly Springs National Forest did as well in 2010. Unemployment on the Tombigbee National Forest dropped 1.3 points between 1995 and 1998 but then rose dramatically to 10.2 in 2001, then having one of the highest in Mississippi. In 2010 the Delta National Forest unemployment rate became the highest for the National Forests in Mississippi.

Rates of poverty are displayed in Table B 74.

Table B 74. Percentage of individuals in poverty 1980 - 2000

Forest	1980[a]	1990	2000
Bienville NF	15.5	25.8	20.2
Delta NF	19.7	26.4	21.5
De Soto NF	14.5	21.2	16.8
Holly Springs NF	22.6	23.6	18.5
Homochitto NF	26.2	31.4	25.3
Tombigbee NF	6.2	24.9	22.6
National Forests in Mississippi Counties	16.7	23.9	19.2
Mississippi	23.9	25.2	19.9

Source: U.S. Census Bureau from USDA NRIS HD Model

a - Data for some counties not available for this year

Four Forests in the National Forests in Mississippi analysis area had poverty rates in 2000 greater than the weighted average for the state. The Bienville, Delta, Tombigbee, and Homochitto National Forests had the highest poverty rates of all Forests in the analysis area. De Soto National Forest had the lowest rate in

2000 of 16.8 percent. All of the Forests experienced declining poverty rates from 1990 to 2000. The average for the National Forests in Mississippi in 2000 was comparable to the state average of 19.9 percent. Since 1980 the poverty rate has risen, and then declined for both the National Forests in Mississippi and the state of Mississippi.

Transfer payments from the federal government to the states and their citizens are another indicator of relative poverty in an area. Transfer payments are payments to persons for which no current services are performed. As a component of personal income, they are payments by government and business to individuals and nonprofit institutions. Although most of transfer payments are made in cash, they also include payments for services such as Medicare, Medicaid, and food stamps. There is often an inverse relationship between earnings and transfer payments. A high dependency in an economy on transfer payments can reflect few employment opportunities or a popular retirement area.

Table B 75 displays the analysis area average and the state receipts of transfer payments from the federal government. The growth rate in federal transfer payments for National Forests in Mississippi analysis area was similar to than that of the state from 1970 to 2002. The De Soto National Forest had a 6.1 percent growth rate of payments over this period, the highest of all the forests and higher than the state average. Delta National Forest had the least growth of payments at 4.6 percent. For 2010, all of the National Forests in Mississippi except the Delta had increased transfer payments resulting in an overall increase for National Forests in Mississippi counties. However the States as a whole, had reduced transfer payments to individuals in 2010 compared to prior years all the way back to 1980.

Table B 75. Federal transfer payments to individuals

Forest	1980	1990	2000	2002	2010
Bienville NF	$187,718	$242,549	$384,069	$445,947	1,446,406
Delta NF	$133,724	$166,519	$247,620	$283,202	204,109
De Soto NF	$1,020,230	$1,523,063	$2,456,267	$2,885,227	3,010,883
Holly Springs NF	$313,460	$417,660	$671,645	$787,626	1,078,476
Homochitto NF	$338,148	$442,055	$644,025	$749,711	2,178,914
Tombigbee NF	$161,973	$201,794	$314,987	$367,467	406,172
Mississippi	$11,340,625	$15,344,316	$23,864,304	$27,925,492	10,129,451

Real rates of increase were determined by inflating 1970 dollars to 2000 with the consumer price index deflator

Economic Diversity

Analyzing the major sectors of an economy allows insight into how diverse and what industries may be driving its growth. Table B 76, below, shows the manufacturing sector (which includes lumber), the sub-sectors for wood based industries, and an estimate of the wild land recreation industry for percentage of industry labor income and employment for 1990, 2000 and 2010. Recreation is not a sector of an economy but comprises several of the services and retail industries.

Table B 76. Economic diversity

	1990 Employment % of Total Economy	2000 Employment % of Total Economy	2010 Employment % of Total Economy	% Average Annual Change '90-'00	1990 Labor Income % of Total Economy	2000 Labor Income % of Total Economy	2010 Labor Income % of Total Economy	% Real Average Annual Change '90-'00
Total Manufacturing	18.5	13.4	11.87	0.5	23.1	16.6	16.4	0.5
Total Wood Products	2.4	1.6	1.72	-1.5	2.6	1.8	2.09	0.1
Wood Furn. & Fixtures	2.3	1.8	0.25	0.5	2.4	1.9	0.19	1.3
Paper & Pulp Products	0.5	0.3	0.14	1.7	1.3	0.7	0.36	-2.4
Wild land Rec.	NA	NA	-	NA	NA	2.2	-	NA
Total Economy[a]	$643,785[b]	$846,169[b]	538,073	2.8	$16,594[b]	$24,227[b]	21182.28 (in millions)	3.9

Source: IMPLAN 1990, 2000 and 2010 Data

a - Real rates of change were determined by inflating 1990 to 2000 with the gross national product price index deflator

b - Represents dollar totals for category

NA = Not Available

Table B 76 displays the fact that the area economy for the National Forests in Mississippi is becoming more diverse because it is decreasing its reliance on the manufacturing sector. Its importance declined by almost six percent of the share of employment and by more than seven percent of the share of labor income from 1990 to 2000. Still, manufacturing is a sizable proportion of the local economy's labor income, representing almost sixteen percent of the economy in 2000.

Of the wood-manufacturing sector, total wood products maintained only a 1.6 percent share of the local economy's labor income in 2000. This is a decrease in percent share that it had in 1990 (2.4 percent). Employment's share diminished from a 2.6 percent share in 1990 to 1.8 percent share in 2000. Wood products comprise a very small share of this economy.

Wild land recreation, which includes federal and state recreation areas, had an estimated 2.2 percent share of the total labor income of the National Forests in Mississippi area economy in 2000. There are no estimates of employment for recreation.

Background data shows employment, labor income, and industrial output, for the all nine sectors of the economy broken out by major standard industrial code (SIC) and by important industry sub-sectors for wood products. The overall composition of the analysis area economy has not changed greatly from 1990. Services increased from 18.4 to 23.9 percent in 2000 as measured by employment change, or a 5.5 percent annual increase. Other large sector share changes include wholesale and retail sales' employment change of 2.4 percent per year, and government whose share increased slightly from 20.3 percent to 20.8 percent over the decade. The entire economy's labor income grew at an average annual rate of 3.9 percent over the 1990 decade (based in constant 2000 dollars). Thus, the local economy has changed little in the last 10 years. The economy's main drivers are services and government.

Another way to indicate diversity of an economy is with the Shannon-Weaver entropy indexes of diversity. This process allows a relative measure of how diverse a county is with a single number. The entropy method measures diversity of a region against a uniform distribution of employment where the norm is equal-proportional employment in all industries. All indices range between 0 (no diversity) and 1.0 (perfect diversity). These two extremes would occur when there is only one industry in the economy (no diversity) and when all industries contribute equally to the region's employment (perfect diversity). In most cases diversity would be registered somewhere between 0 and 1.0. Another factor affecting the magnitude of the index is the number of industries in a local economy; the greater number the larger the index.

Table B 77 contrasts the change in diversity for 1990, 2000 and 2010 at the four digit standard industrial code, or at the individual industry level. For a point of reference Mississippi serves as comparison guide.

The indices measuring diversity indicate slightly more diversity in the state than in the analysis area during the 1990-2010 decades. However, the Forests' area became 21.05 percent more diverse while Mississippi became 0.76 percent more diverse. This degree of change has made the Forests' Counties nearly equivalent to the State as a whole. The only National Forest Counties that did not follow this positive trend was Sharkey County for the Delta National Forest. The Delta area index was down 3.05 percent from 1990 to 2010

Table B 77. Shannon-Weaver entropy indices

	1990 Index	2000 Index	2010 Index	Percent Change 1990 to 2010
Bienville NF[a]	.55054	.55312	.62850	14.16%
De Soto NF[a]	.60296	.59816	.69088	14.58%
Delta NF[a]	.61395	.62294	.59524	-3.05%
Holly Springs NF[a]	.57419	.57905	.69242	20.59%
Homochitto NF[a]	.60285	.61712	.70424	16.82%
Tombigbee NF[a]	.54842	.55942	.65529	19.49%
National Forests in Mississippi Counties[a]	.59017	.59218	.71442	21.05%
Mississippi[a]	.72414	.71913	.72965	0.76%

Source: USDA Forest Service, Information Monitoring Institute

a - Weighted average estimate of aggregated counties. Weighted by full-time and part-time employment in their respective years.

As indicated by the analysis above of the National Forests in Mississippi cumulative economy, the overall change during the 1990-decade was marginal. This is substantiated by these diversity indices which changed very little.

Economy and Trade

A principle way an economy grows is by export of goods and services. Most typically, manufacturing activity is thought of as providing most of this export related activity. However, services and retail trade can be considered "export" industries if significant visitors come in from outside in travel-related activities to bring in new dollars. A manufacturing industry can be a net importer if it imports more of a commodity that it exports.

Table B 78 below compares the exporting characteristics of the National Forests in Mississippi analysis area for 1990 and 2000.

Table B 78. Exporting of selected industries in millions of 2000 dollars (1990&2000)

	1990 Net Exports[a]	2000 Net Exports	2010 Net Exports(2010$s)
Wood Furniture & Fixtures	$782.2	$464.7	-$35.59
Paper & Pulp Products	$524.7	$301.2	-$130.04
Wood Products	$944.4	$1,021.4	$342.00
Total Manufacturing	$1,509.0	$343.0	$6,071.71
Total of All Sectors	-$2,033.1	-$11,085.9	-$15,789.79

Source: IMPLAN 1990, 2000 and 2010 data

a - 1990 dollars converted to 2000 dollars via GDP price deflator; in millions of dollars

The background data shows that the National Forests in Mississippi local economy continued to be a net importing economy in 2000. The 1990 decade saw the total economy's reliance on imports increase tremendously, thereby becoming more reliant on other areas for its goods and services production. Wood processing, meanwhile, showed net exporting decreases in the wood furniture and fixtures industry as well as the paper and pulp products industry to net negatives. Total lumber and wood products net exports increased slightly between 1990 and 2000 but dropped significantly by 2010. Total manufacturing lost a

significant share in net exporting by about $1,166 million in the 1990 decade but, jumped significantly to $6,071 million in 2010.

In summary, the National Forests in Mississippi area economy became more reliant on imports during the 1990 – 2010 decades. More dollars, therefore, flowed out of the economy than flowed in, reducing the ability of enhancement of further economic activity through the multiplier effect.

Federal Payments to the State

The Payments in Lieu of Taxes (PILT) program is administered by the Bureau of Land Management. PILT payments are made to local governments that have federal lands within their borders to compensate for loss of property tax revenues. Twenty five percent of National Forest revenues are paid to the State. When these receipts do not meet the required level of payment, the 25 percent funding is supplemented. The following table includes data on payments from all sources made to the State of Mississippi in lieu of taxes for fiscal years 2004 through 2011. Trends in 25 Percent Funds and PILT are important to show a possible erosion of an area's tax base. This information is provided by National Forest in Table B 79.

Table B 79. Payments to State of Mississippi for the National Forests in Mississippi 2004-2011

	2004	2005	2006	2007	2008	2009	2010	2011
Bienville NF	$1,604,208	$1,641,104	$1,657,515	$1,654,113	$1,439,323	$1,413,105	$1,287,888	$1,080,767
De Soto NF	$3,057,466	$3,127,789	$3,153,308	$3,152,583	$3,100,158	$2,748,063	$2,551,554	$2,261,190
Holly Springs NF	$603,267	$617,141	$623,312	$622,033	$753,438	$737,649	$682,599	$601,468
Homochitto NF	$2,248,378	$2,300,091	$2,323,091	$2,318,324	$2,364,010	$2,201,958	$1,902,280	$1,693,894
Delta NF	$103,318	$105,695	$106,752	$106,532	$230,296	$173,851	$149,912	$150,991
Tombigbee NF	$404,061	$413,355	$417,488	$416,631	$469,104	$431,112	$383,137	$359,198
National Forests in Mississippi Total	$8,020,698	$8,205,173	$8,281,466	$8,270,217	$8,356,329	$7,705,738	$6,957,371	$6,147,508

Table B 80 below, shows the aggregated forest county changes from various years for data that was common between the two sources (all data has been updated to 2000 dollars).

Table B 80. Twenty-five percent funds

	1985[a] (2000 $'s)	1998 (2000 $s)	Real Avg. Annual Change
National Forests in Mississippi Counties	$8,032,900	$8,068,800	0.03%
Mississippi	$8,109,600	$8,191,800	0.1%

Source: USDA Forest Service

a - Data adjusted to 2003 dollars via gross domestic price deflator

County revenues from the Forest Service have been variable since 1985, the first year of available data for 25 percent funds. Even with the year-to-year variability, National Forests in Mississippi payments to counties, adjusted to 2000 dollars, have only grown by an average 0.03 percent real rate per year since 1985. Inflation over the 1985-1998 period averaged -2.7 percent per year as measured by the gross domestic price deflator.

Issaquena County is within the proclamation boundary of the National Forests in Mississippi, but do not contain National Forest System land, hence there are no payment to states for these counties.

National Forests in Mississippi counties have experienced a change in funds that vary greatly from the Forest average. For instance, the Bienville and Holly Springs National Forest counties payment to states have decreased by 8 percent and 3 percent each, respectively. The Delta National Forest has made the greatest increase in payments to state, 16 percent more than in 1985. The De Soto National Forest averages are only slightly higher than the National Forests in Mississippi as a whole. The Homochitto and the Tombigbee National Forest counties have experienced a 3 percent increase in payment to states since 1985.

At the same time, PILT funds (Table B 81) have increased to help offset the large acreage federal ownership of these counties' lands. While the magnitude of PILT payments is much smaller than 25 Percent Funds, PILT payments have tended to increase over time as timber harvests have decreased on the National Forests in Mississippi. Inflation adjusted payments in the National Forests in Mississippi analysis area have grown from $210,257 in 1991 to $602,777 in 2001, an 11.1 percent average annual increase. This rate of increase is higher than the rate of increase for all counties in Mississippi over this same period.

Table B 81. Payment in lieu of taxes (PILT)

	1991 -(2000 $s)[a]	2001 (2000 $s)[a]	Real Avg. Annual Change
National Forests in Mississippi Counties	$210,257	$602,777	11.1%
Mississippi	$435,523	$909,188	7.6%

Source: U.S. Dept. of Interior

a - Data adjusted to 2000 dollars via gross domestic price deflator

National Forests in Mississippi Receipts

The resource management programs of the National Forests in Mississippi generate revenue from timber sales, grazing permits, land use permits, recreation special uses and user fees, power rights of way, and minerals extraction. These revenues are used as authorized by the Forest Service for National Forest management, submitted to the United States Treasury, or paid to the State of Mississippi in lieu of taxes not paid to the local counties. These receipts made a large increase in fiscal year 2006 due to the salvage of large quantities of timber damaged by Hurricane Katrina. The following years from 2007 till 2010 the revenue trends were declining. This was mostly due to declining timber sale receipts. This trend was reversed in 2011 with a doubling of revenue compared to 2010. This was again mostly due to increased timber revenue. The following table displays these revenues for fiscal years 2005 through 2011 for each revenue source. If additional details are desired by National Forest this information is included for each National Forest in the social economic overview contained in the forest plan set of background documents.

Table B 82. National Forests in Mississippi all service receipts (ASR) 2005 – 2011

	2005	2006	2007	2008	2009	2010	2011
Class 1 - Timber	$3,101,710.41	$6,596,328.53	$1,719,560.84	$2,161,107.52	$967,023.39	$839,078.28	$1,957,900.95
Class 2 - Grazing East	$200.84	$190.80	$78.12	$88.83	$108.15	$0.00	$108.15
Class 3 - Land Use	$88,575.82	$101,807.32	$67,203.41	$88,103.57	$105,390.30	$125,983.78	$147,216.28
Class 4 - Recreation Spec. Uses	$1,482.70	$0.00	$425.00	$891.95	$58.00	$59.00	$0.00
Class 5 - Power	$14,196.86	$30,153.45	$26,429.19	$31,533.42	$53,914.97	$74,393.33	$65,766.16
Class 6 - Minerals	$0.00	$375.00	$780.45	$5,580.33	$0.00	$0.00	$0.00
Class 7 - Recreation User Fees	$60.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total NFF Receipts	$3,206,226.62	$6,728,855.10	$1,814,477.01	$2,287,305.62	$1,126,494.81	$1,039,514.39	$2,170,991.54
KV	$3,943,621.05	$3,611,934.95	$3,372,316.44	$1,961,083.72	$1,882,963.69	$1,954,381.86	$4,332,906.91
Timber Purchaser Road Credits	$7,136.88	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Specified Road Credits	$2,269,836.02	$1,243,384.36	$612,143.72	$1,293,325.26	$570,671.17	$789,680.75	$1,440,425.97
Salvage Sales	$63,999.76	$11,085,999.84	$139,780.59	$109,450.03	($7,375.45)	$20,797.85	$2,144.43
TPTP Revenue					$422,674.40	$24,131.67	$25,821.22
Grand Total	$9,490,820.34	$22,670,174.25	$5,938,717.76	$5,651,164.63	$3,995,428.62	$3,828,506.52	$7,972,290.07

B.3.2 Social Economic Impact Analyses

The Model

Economic effects to local counties were estimated using an economic input-output model developed with IMPLAN 3.0 (IMPLAN). IMPLAN (Impact Analysis for Planning) is a software package for personal computers that uses the latest national input-output tables from the Bureau of Economic Analysis, as well as data from the Bureau of Labor Statistics and the Census Bureau. The software was originally developed by the Forest Service and is now maintained by the Minnesota IMPLAN Group, Inc (MIG). Data used for the impact analysis was from secondary data for those counties considered to be in the forest's impact area. The forest's zone of economic influence was delineated using a standard Forest Service protocol (Retzlaff, 2010).

Forest Contribution and Economic Impact Analyses

The IMPLAN model was used to assess the economic contributions of the National Forests in Mississippi. Economic contribution is a way of assessing the degree to which current forest management supports regional and local economies. An impact analysis, on the other hand, describes what happens under different management strategy alternatives. The impact of changes in final sales stemming from management actions are measured by changes in employment and income. Economic impacts were estimated for 2015, using the expenditure data for recreation, wildlife, and hunting (U.S. Forest Service's national visitor use monitoring data) and harvest volume estimates for timber.

Impacts to local economies are measured in two ways: employment and labor income. Employment is expressed in number of jobs. A job can be seasonal or year-round, full-time or part-time. The income measure used was labor income expressed in 2009 dollars. Labor income includes both employee compensation (pay plus benefits) and proprietors income (e.g. self-employed).

Data Sources

IMPLAN, an "input-output" model produces a linear relationship so that impact estimates need only be calculated once per model and then applied to the direct change in final demand for each alternative. A Forest Service-developed spreadsheet known as "FEAST" (Forest Economic Analysis Spreadsheet Tool) was used to apply the IMPLAN impact results to each alternative, expressed in units of output. FEAST transformed the dollar impact for a given industry from IMPLAN to the resource output by alternative into a specific employment and income estimate. Specifications for developing IMPLAN impact estimates (response coefficients) and levels of dollar activity are stated below.

Timber

Volume Data – Volume data was derived from cut and sold reports and estimates from the timber staff, by alternative.

Use of the Model –Data from the forest shows that only 63 percent of the timber volume was processed in the study area. Most of the timber volume (40 percent) was processed by pulp mills, about 25 percent was processed by saw mills, 20 percent by veneer mills and the remainder by chip board and pole mills. Impacts represent the economic activity occurring in all backward linking sectors associated with the final demand output of the timber industries described above.

Recreation

Recreation visits include hunting and fishing as well activities such as hiking, camping, horseback riding, and viewing scenery. Recreation visits were derived from the national visitor use monitoring survey that

is done for one-quarter of national forests each year. The National Forests in Mississippi were surveyed in 2009. The resulting calculations yielded visits for local and non-local, day use, on national forest overnight use, and off national forest overnight use. These use metrics were entered into FEAST to link with IMPLAN impact response coefficients to yield an impact for recreation and wildlife resources.

Spending Segments

The spending that occurs on a recreation trip is greatly influenced by the type of recreation trip taken. For example, visitors on overnight trips away from home typically have to pay for some form of lodging (e.g., hotel/motel rooms, fees in a developed campground, etc.) while those on day trips do not. In addition, visitors on overnight trips will generally have to purchase more food during their trip (in restaurants or grocery stores) compared to day-use visitors. Visitors who have not traveled far from home to the recreation location usually spend less money than visitors traveling longer distances, especially on items such as fuel and food. Analysis of spending patterns has shown that a good way to construct segments of the visitor market with consistent spending patterns is to use the following seven groupings:

1. local visitors on day trips,
2. local visitors on overnight trips staying in lodging on the national forest,
3. local visitors on overnight trips staying in lodging off the national forest,
4. non-local visitors on day trips,
5. non-local visitors on overnight trips staying in lodging on the national forest,
6. non-local visitors on overnight trips staying in lodging off the forest, and
7. non-primary visitors (visits to the National Forests in Mississippi were not the primary destination for the visit).

The table below shows the distribution of visits by spending segment (data from the National Forests in Mississippi NVUM Report, 2011).

Table B 83. Distribution (percentage) of National Forest visits[a] by spending segment[b] on the National Forests in Mississippi

	Non-local Segments			Local Segments			Non-Primary[c]	Total
	Day	Overnight on NF	Overnight off NF	Day	Overnight on NF	Overnight off NF		
Percent of National Forest Visits[a]	8	3	1	81	2	1	4	100

a - A National Forest visit is defined as the entry of one person onto a national forest to participate in recreation activities for an unspecified period of time. A National Forest Visit can be composed of multiple Site Visits.

b - The market segments shown here relate to the type of recreation trip taken. A recreation trip is defined as the duration of time beginning when the visitor left their home and ending when they got back to their home. “Non-local” trips are those where the individual(s) traveled greater than approximately 50 miles from home to the site visited. “Day” trips do not involve an overnight stay outside the home, “overnight on-forest” trips are those with an overnight stay outside the home on National Forest System (NFS) land, and “overnight off-forest” trips are those with an overnight stay outside the home off National Forest System land.

c - “Non-primary” trips are those where the primary recreation destination of the trip was somewhere other than the national forest under consideration.

The table shows that over 80 percent of the visits to the National Forests in Mississippi are local area residents on day trips away from home. Less than 7 percent of the visits are made by people who are on trips that include a night away from home. According to data from the 2011 National Visitor Use Monitoring Report, about half of the visiting parties spend $40 or less per party per visit. Almost 70

percent of the visiting population comes from households in the $25,000 to $49,999 range; nearly a quarter are from households with incomes less than $25,000; and only about 1.2 percent comes from households in the $75,000 to $99,999 range.

Federal Expenditures and Employment

Expenditure Data – A forest budget was estimated for each alternative, and these estimates were used for forest expenditures, some of which had local economic effects. The proportion of funds spent by program varied by alternative according to the themes emphasized for that alternative. Forest Service employment was estimated by the forest staff based on examination of historical Forest Service obligations.

Use of the Model – To obtain an estimate of total impacts from Forest Service spending, salary and non-salary portions of the impact were handled separately. Non-salary expenditures were determined by using budget object code information from the National Finance Center. This profile was run through the model for non-salary expenditures per one million dollars, and the results multiplied by total forest non-salary expenditures. FEAST was again used to make the calculations. Salary impacts result from forest employees spending a portion of their salaries locally. IMPLAN includes a profile of personal consumption expenditures for several income categories.

Revenue Sharing – Secure Rural Schools Payments

Expenditure Data – On October 3, 2008, the Secure Rural Schools and Community Self-Determination Act of 2000 was reauthorized as part of Public Law 110-343. The new Secure Rural Schools Act has some significant changes. To implement the new law, the Forest Service requested states and counties to elect either to receive a share of the 25-percent rolling average payment or to receive a share of the Secure Rural Schools State (formula) payment. A county electing to receive a share of the State payment that is greater than $100,000 annually is required to allocate 15 to 20-percent of its share for one or more of the following purposes: projects under Title II of the Act; projects under Title III; or return the funds to the Treasury of the United States.

Use of the Model – Title I funds were allocated to roads and schools using the national expenditure profile for state/local government education (schools) and local model estimates for road construction. In IMPLAN, $1 million of each profile was used to obtain a response coefficient for Title I Forest Service payments to impact area counties. A response coefficient for Title II funds was estimated by running 1 million dollars through the Forestry Services Sector Title III funds are given directly to state and local governments.

Effects on the Local Economy

The management of the National Forests in Mississippi has the potential to affect jobs and income within its area of influence. The Forest Service uses IMPLAN (Impact for planning) software and FEAST (Forest Economic Analysis Spreadsheet Tool) to estimate these impacts and contributions. The database in IMPLAN represents Census information for 528 economic sectors. On the Forests, effects are based on changes in six major forest-level outputs – the amount of timber volume and type of product to be harvested, payments to counties, Forest Service expenditures, recreation use, and minerals. For purposes of estimating the socio-economic impact, counties that contain forest acreage were selected as the impact area. The input - output analysis is based on the interdependencies of the production and consumption elements of the economy within the impact area. Industries purchase from primary sources (raw materials) and other industries (manufactured goods) for use in their production process. These outputs are sold to either to other industries for use in their production process or to final consumers. The structure of interdependencies between the individual sectors of the economy forms the basis of the input/output model. The flow of industrial inputs can be traced through the input - output accounts of the

IMPLAN model to show the linkages in the impact area economy. This allows the determination of estimated economic effects (in terms of employment and income).

Table B 84 below illustrates the percentage contribution of the National Forests in Mississippi's current management program to the area's economy. The National Forests in Mississippi are associated with 0.033 percent of the total local economy's jobs, and 0.034 percent of the labor income. Agriculture, mining, retail trade, accommodation and food services, and government are the sectors of the economy that show the most benefit from the Forests' activities.

Table B 84. Current role of Forest Service-related contributions to the area economy

	Employment		Labor Income		Value Added	
	(jobs)		(Thousands of 2011 $)		(Thousands of 2011 $)	
	Area	FS -	Area	FS -	Area	FS -
Industry	Totals	Related	Totals	Related	Totals	Related
Agriculture	19,561	138	$542,771	$5,438	$628,614	$5,473
Mining	7,133	208	$385,962	$7,774	$837,501	$21,121
Utilities	3,282	7	$277,810	$530	$1,083,188	$2,035
Construction	36,054	36	$1,212,558	$1,210	$1,506,580	$1,499
Manufacturing	63,881	68	$3,521,495	$3,938	$6,059,229	$6,942
Wholesale Trade	9,344	62	$567,411	$3,710	$1,005,484	$6,568
Transportation & Warehousing	16,503	42	$789,624	$1,817	$985,475	$2,306
Retail Trade	55,301	293	$1,421,845	$6,912	$2,064,781	$10,491
Information	4,770	9	$191,787	$329	$548,766	$843
Finance & Insurance	21,995	38	$747,830	$1,357	$1,333,620	$2,289
Real Estate & Rental & Leasing	14,913	37	$179,512	$544	$3,688,459	$8,393
Prof, Scientific, & Tech Services	18,215	38	$917,624	$2,004	$1,124,145	$3,538
Mgmt of Companies	2,604	4	$176,712	$276	$206,714	$328
Admin, Waste Mgt & Rem Serv	25,987	33	$568,743	$700	$728,002	$895
Educational Services	6,965	10	$173,537	$248	$157,352	$224
Health Care & Social Assistance	39,872	74	$1,814,620	$3,203	$1,954,965	$3,497
Arts, Entertainment, and Rec	8,563	85	$155,624	$1,379	$344,899	$3,153
Accommodation & Food Services	40,653	230	$761,788	$3,702	$1,247,539	$5,614
Other Services	28,351	46	$840,434	$1,339	$882,584	$1,453
Government	113,334	321	$6,204,177	$26,892	$7,479,663	$27,426
Total	537,280	1,778	$21,451,862	$73,301	$33,867,557	$114,088
FS as Percent of Total	---	0.33%	---	0.34%	---	0.34%

The economic impacts of the current direction and the alternatives are given in the tables below (Table B 85-Table B 88).

Table B 85 illustrates how employment varies by alternative, defined as the average annual number of workers, be they part time, full time, seasonal, or temporary. Due to possible substitution effects from competing non-government sources (such as similar volume of timber harvesting which may occur on private lands if national forest timber is not offered to the market), these jobs are characterized as being

associated with local economic activity initiated by Forest Service programs and activities, rather than caused by these activities.

Alternatives A and E are the alternatives that show the greatest change in employment across all programs.

Table B 85. Employment by program by alternative (average annual, decade 1)

	Total Number of Jobs Contributed				
Resource	**Current**	**A**	**C**	**D**	**E**
Recreation	249	168	264	264	264
Wildlife and Fish	385	269	409	409	409
Grazing	0	0	0	0	0
Timber	257	159	387	432	506
Minerals	288	288	288	288	288
Payments to States/Counties	147	147	147	147	147
Forest Service Expenditures	452	384	461	506	530
Total Forest Management	1,778	1,416	1,955	2,046	2,143
Percent Change from Current	--	- 20.4%	10.0%	15.1%	20.6%

Labor income (employee compensation, being the value of wages and benefits, plus income to sole proprietorships) shows the same pattern as employment, with alternatives A and E showing the greatest change in labor income.

Table B 86. Labor income by program by alternative (average annual, decade 1; $1,000)

	Thousands of 2011 dollars				
Resource	**Current**	**A**	**C**	**D**	**E**
Recreation	$6,168	$4,162	$6,549	$6,549	$6,549
Wildlife and Fish	$10,381	$7,253	$11,010	$11,010	$11,010
Grazing	$0	$0	$0	$0	$0
Timber	$11,081	$6,887	$16,705	$18,650	$21,840
Minerals	$10,495	$10,495	$10,495	$10,495	$10,495
Payments to States/Counties	$5,858	$5,858	$5,858	$5,858	$5,858
Forest Service Expenditures	$29,318	$24,921	$30,670	$33,737	$35,271
Total Forest Management	$73,301	$59,575	$81,287	$86,299	$91,022
Percent Change from Current	---	- 18.7%	10.9%	17.7%	24.2%

Employment and income found in Table B 85 and Table B 86, respectively, are divided into the major sectors of the National Forests in Mississippi economy in Table B 87 and Table B 88. For each alternative, agriculture, manufacturing, retail trade, and accommodation and food are the sectors most affected by Forest Service programs and expenditures. Labor income in the form of wages and proprietors' earnings follows a similar pattern, with the aforementioned sectors benefitting the most as well.

Table B 87. Employment by major industry by alternative (average annual, decade 1)

	Total Number of Jobs Contributed				
Industry	**Current**	**A**	**C**	**D**	**E**
Agriculture	138	94	194	213	244
Mining	208	208	208	208	208
Utilities	7	5	8	8	9
Construction	36	34	38	38	39
Manufacturing	68	44	99	109	127
Wholesale Trade	62	44	67	68	70
Transportation & Warehousing	42	31	47	49	51
Retail Trade	293	218	314	322	329
Information	9	7	10	10	10
Finance & Insurance	38	31	43	45	47
Real Estate & Rental & Leasing	37	30	40	42	44
Prof, Scientific, & Tech Services	38	32	41	44	46
Mgmt of Companies	4	3	5	5	5
Admin, Waste Mgt & Rem Serv	33	25	38	40	42
Educational Services	10	8	11	12	12
Health Care & Social Assistance	74	61	82	87	92
Arts, Entertainment, and Rec	85	59	90	91	92
Accommodation & Food Services	230	166	247	251	255
Other Services	46	37	52	56	59
Government	321	277	322	348	362
Total Forest Management	1,778	1,416	1,955	2,046	2,143
Percent Change from Current	--	- 20.4%	10.0%	15.1%	20.6%

Table B 88. Labor income by major industry by alternative (average annual, decade 1)

	Thousands of 2011 dollars				
Industry	**Current**	**A**	**C**	**D**	**E**
Agriculture	$5,438	$3,614	$7,810	$8,632	$9,973
Mining	$7,774	$7,770	$7,777	$7,778	$7,780
Utilities	$530	$419	$613	$652	$699
Construction	$1,210	$1,138	$1,262	$1,288	$1,317
Manufacturing	$3,938	$2,535	$5,776	$6,413	$7,453
Wholesale Trade	$3,710	$2,678	$4,023	$4,101	$4,188
Transportation & Warehousing	$1,817	$1,344	$2,056	$2,139	$2,246
Retail Trade	$6,912	$5,185	$7,417	$7,610	$7,773
Information	$329	$262	$362	$377	$394
Finance & Insurance	$1,357	$1,107	$1,504	$1,575	$1,653
Real Estate & Rental & Leasing	$544	$476	$581	$601	$622
Prof, Scientific, & Tech Services	$2,004	$1,709	$2,155	$2,279	$2,378
Mngt of Companies	$276	$224	$314	$327	$346
Admin, Waste Mngt & Rem Serv	$700	$545	$793	$832	$879

	Thousands of 2011 dollars				
Industry	**Current**	**A**	**C**	**D**	**E**
Educational Services	$248	$203	$274	$289	$304
Health Care & Social Assistance	$3,203	$2,634	$3,537	$3,745	$3,942
Arts, Entertainment, and Rec	$1,379	$970	$1,470	$1,479	$1,488
Accommodation & Food Services	$3,702	$2,683	$3,970	$4,038	$4,100
Other Services	$1,339	$1,078	$1,517	$1,607	$1,707
Government	$26,892	$23,003	$28,078	$30,536	$31,780
Total Forest Management	$73,301	$59,575	$81,287	$86,299	$91,022
Percent Change from Current	---	- 18.7%	10.9%	17.7%	24.2%

Alternative A would create a decrease in employment opportunities, while alternative E would provide the greatest increase in opportunities. Overall, the economic impacts of changing the management of the National Forests in Mississippi would have a limited impact on the total economy in the Forests' area of influence, but the analysis does show which sectors would be affected the most from changes in Forest Service management.

Summary of Social and Economic Trends

National and local socioeconomic trends influence the ability of communities to adapt to changing circumstances. Trends identified in secondary and primary data analysis for the National Forests in Mississippi include demography, economy, community attitudes, and implications.

Population growth in the 1990s occurred at a relatively rapid, yet uneven, rate. Thirty-five counties across Mississippi account for an average growth rate of 10 percent. Population growth appears to be a result of a natural increase in the population which offset the out-migration for the state. The population is expected to grow by another 13 percent by 2015.

The analysis area's rural characteristic increased by about two percentage points to 55.8 percent for the National Forests in Mississippi from 1990 to 2000. Despite the fact that the forest areas have maintained or increased their rural characteristics, urban areas influence the National Forests in Mississippi. Nearby urban growth (e.g. Jackson, Memphis, and the Gulf Coast) means that demands on recreation resources as well as for land development will increase.

Mississippi as a whole has maintained a heterogeneous population of Whites and Blacks for the past 20 years. A recent increase in Hispanic residents and a subsequent projection for the Hispanic population to rise significantly in the next ten years translates into changes in community attitudes, values, and beliefs concerning forest management and recreation preferences. The increase on the National Forests in Mississippi in conjunction with population decreases may be from non-minorities moving out of the area.

Community culture, lifestyles, local economies, and social structures are changing at different rates. One result is the changes can cause social disruptions or tensions about new residents, new economic activities, or changes in forest management policies. This social disruption can amplify disagreements within communities or groups or it can migrate to conflicts about forest management issues.

Current attitudes, beliefs, and values concerning National Forest System management were gathered during a telephone survey conducted by the USFS Southern Research Station. Nearly 600 phone calls were made to over 139 counties within a 75 mile radius of each of the six National Forests in Mississippi forest boundaries. A general summary of the findings gives insight to attitudes toward NF management.

Residents of Mississippi and the surrounding areas participate in outdoor activities, the majority prefers viewing nature via walking or driving, fishing, hiking, gathering non-timber products, off-road vehicle driving, and developed camping.

The forest management activities that are most important to the respondents included maintaining stream quality, providing habitat for fish and wildlife, and protecting endangered plants. The public was also asked questions about their perceptions of the most important management activities on public lands. The largest share of the public's responses gave preference to forest management objectives that provide water sources, protect habitats, maintain the forests conditions, protect older forests, increase law enforcement, and prevent wildfires. The survey indicated that the local public has a fairly strong environmental conservation leaning. While extraction of natural resources is not completely discounted by the public, preservation and provision of wildlife and recreation services are highly desired.

The Forests' economic health as measured by per capita income grew at a modest rate from 2000 to 2010, a 6.2 percent average annual rate over the ten-year period, slightly more than that of Mississippi's rate. The De Soto National Forest counties per capita income grew at the greatest rate on the National Forests in Mississippi with a rate of increase of 7.82 percent. Still, per capita income in 2010 for Forest counties was about $1,057 less than that of the State. Income growth rate in this area has progressed steadily, indicating that the area is relatively economically strong. People with strong incomes and jobs are more likely to have free time and need an outlet for recreation. The national forest is a prime outlet for these people.

The National Forests in Mississippi analysis area's unemployment rate increased from 6.8 and 6.3 percent in 1995 and 2001 to 10.3 percent in 2010. The rate in 2010 was similar to the rate of Mississippi, 10.4 percent.

The National Forests in Mississippi poverty rates declined nearly 5 percentage points over the period from 1990 to 2000. Similarly, Mississippi's rate has decreased by about 5 percent over the same time period. The De Soto and Holly Springs National Forests low poverty rates in 2000 played a part in the favorable National Forests in Mississippi poverty rate versus that of the state.

Transfer payments in the National Forests in Mississippi analysis area showed a 5.5 percent increase in average annual real rate of growth from 1970 to 2000, similar to that of the state, which showed at 5.3 percent increase. Through the 1990s the rate of government assistance for the analysis area is slightly greater than that of the state. The 2010 data shows continued growth in transfer payments to National Forests in Mississippi counties, but a sharp drop in payments statewide. The National Forests in Mississippi transfer payment growth gives the local economies added economic support.

Percentage of female head of households was lower than the state percentage in the analysis area. The National Forests in Mississippi was 1 percent below the state's 10 percent of all households, indicating a lesser degree of hardship.

The services sector is a significant source of employment in the analysis area accounting for 23.9 percent of the employment. The economy's main drivers, in the labor income area, are services and government. Employment in the manufacturing sector, which includes lumber and wood products, is declining in the state of Mississippi. The area as a whole has become less reliant on the manufacturing sector. The Shannon-Weaver entropy indexes indicate that overall, local and state economies are relatively diverse making the area less prone to economic recessions.

Thus, the economy and demography of this area appears to be healthy. Population has grown steadily in the 1990s; poverty has decreased. The economy's composition has changed only marginally in the last

several decades. It has become more reliant on importation of goods and services, rather than production of its own goods and services for export. The analysis area has a fairly diverse economy with resilient characteristics that may allow it to weather downturns in the economy. For the National Forests in Mississippi analysis area most of the economic and demographic variables looked at in this overview were comparable with those of Mississippi. Most social and economic characteristics looked at in this overview seem to be on par with that of the state.

Payments to the State have been relatively level through 2008. Payments in 2009 through 2011 have trended downward.

Recent National Forests in Mississippi revenue trends for years 2007 till 2010 have been down. This was mostly due to declining timber sale receipts. This trend was reversed in 2011 with a doubling of revenue compared to 2010. This was again mostly due to increased timber revenue.

Alternative effects on employment and income would be a trend increasing from alternative A to alternative E.

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